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THE SCHOOL REVIEW

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THE OUTLOOK FOR ENGLISH IN NEW YORK STATE.

Since the date of my last writing decided progress has been made in the direction of securing better school instruction in English.

I. The Cornell Faculty, at their meeting of February 3d, adopted the following measure:

In view of the imperfect preparation of many students in English, *Resolved*, that in and after June, 1894, and until further notice, certificates from schools be not accepted in lieu of the entrance examination in that subject. Special notice to be sent to all preparatory schools.

II. A few days later, February 9th, the Board of Regents adopted a series of resolutions:

1. That the Regents require satisfactory teaching of the English language, especially in composition, for at least three hours each week during the academic course, as a condition of admission to the University or of retention on the list of institutions in good standing and entitled to receive apportionments from the academic fund.*

The significance of this joint action is evident at a glance. On the one hand Cornell University decrees that all schools not under the Regents shall be subject to entrance tests in English. On the other, the Regents make generous provision for the teaching of English in all their schools. The appointment of a special examiner in English will give to the new curriculum additional value. It will be observed that the precise mode of treating papers correct in subject matter but faulty in English form, is at present a matter for discussion. But, in any event, one thing is clear: faulty papers *will not go through*.

* For further information concerning the action of the Regents, see the article, in this number of THE SCHOOL REVIEW, on *The Regents' Work in English*.

How long will it be before the good results of the change show themselves unmistakably? I am disposed to fix the date for private schools at June, 1894; certainly by that time our entrance examination will be as searching as we can make it. All persons interested in the matter, whether teachers or candidates, may, upon application to the Registrar, obtain a copy of the new regulations governing the examination. From schools under the Regents we shall expect a decided change by June, 1895; the full effect of the new curriculum perhaps by June, 1896.

During the intervening three years, 1893 to 1896, we must be prepared for some inequality and irregularity. It will be the duty of the English department to reduce the amount to a minimum, by imposing extra work perhaps, and certainly by rejecting at the term-examinations all students whose writing is evidently unsatisfactory. A step in this direction has already been taken; the present Freshman class has been treated much more rigorously than its predecessors, and many will be required to take the work over again.

In general I cherish the hope that the mere announcement of the resolve to demand thorough reform will accomplish much. Candidates are apt to respect the wishes of an institution that is in earnest. To those candidates who expect to present themselves this year under the old system of Regents' diploma and school certificate let me give a friendly warning: Make sure of your ability to express yourselves clearly and correctly. Your certificate or your diploma may be no guarantee of the ability; in that case you will only incur trouble and perhaps even mortification after admission. Henceforth Cornell will not tolerate poor English.

In strictness the following remarks upon the English course in Cornell, as it is to be, are out of place in a school journal which deals professedly with secondary education only. But in view of the prominence, not altogether enviable, acquired by Cornell in this discussion, the friends of education in general will doubtless waive technical objections for the sake of hearing what improvements we purpose making at home.

Junior and Senior Rhetoric are elective. I shall not speak of them further than to remark that I shall henceforth be relieved of Junior Rhetoric. Thanks to the intervention of President Schurman and the liberality of the Trustees, an assistant will be ap-

pointed to divide with Professor Emerson the burden of Sophomore Rhetoric. The time thus gained by Professor Emerson will enable him to conduct the Junior Rhetoric in my place. I expect to take charge of the Freshman class, not giving the instruction directly but guiding and controlling it at every step, preparing the reading and text-book work week by week with the instructors, and assigning the subjects for writing. These subjects will always be in direct connection with the reading. The reading will be in De Quincey, Macaulay, and Carlyle, authors offering the widest range of vocabulary. I may state here that the chief object of the Freshman year will be to acquire freedom and discrimination in the use of words, and a perception of shades of meaning. All doubtful work in this year will be examined and judged by me personally. The prescribed two hours will be two hours of actual attendance.

In like manner Sophomore English, in charge of Professor Emerson and his assistant, will require two hours of actual attendance. The reading will be in authors of the eighteenth century: Johnson, Goldsmith, Gibbon, Burke, and one or two others not yet determined upon. Minto's Prose will be used throughout the year. All writing will be upon the authors read, or upon collateral reading directly connected with the text. Special attention will be given to sentence-structure and paragraphing, and to Precision and Force.

Am I over sanguine in expecting the best results from such a plan strictly enforced at all points? The fundamental principle is obvious: No writing without incessant reading, no reading without incessant writing. The texts read will supply food for thought; the student is to be trained to express that thought in workmanlike manner.

J. M. Hart.

THE STUDY OF ENGLISH IN THE PUBLIC SCHOOLS.

A report has recently been made to the Overseers of Harvard College by the Committee on Composition and Rhetoric. This report shows the very faulty use of the English language by a class of students in that ancient and honorable university.

In the report a large number of the productions of those students are printed in *facsimile*, reduced to one-half their original size. Beyond a doubt those students had no command of the English language, though they had passed the Harvard examinations and entered the institution. This is conclusive proof that the standard of admission to Harvard was low. The report deplores the fact that the professors are obliged to supplement the defective preparation of students in English, before going on to the more advanced work appropriate to them ; and it seems to lay the fault at the door of the preparatory schools.

But the preparatory schools had met the requirements. Their students had passed the entrance examinations. These schools might with equal propriety complain that the pupils who come to them are not well fitted for the work appropriate to these fitting schools ; and the lower schools may likewise insist upon a better training in English in the primary schools ; and so on to the kindergarten, the home, and even to "hereditary tendency and environment."

Again, even the graduates of Harvard and other colleges and universities, do not all write good English. To quote from one of them : "Professor Pickering of Harvard University makes a strong point in his endeavor to secure funds to properly equip the Harvard observatory in Peru by the statement that owing to the unsteady character of the atmosphere in the United States and in Europe telescopes of high magnifying power can not be used, so that even the great Lick telescope of 36 inches aperture is able to do no better work than Professor Pickering has been able to do in Peru with a little 13-inch instrument, a statement that would be readily accepted by those who have watched in vain for the announcement of astronomical discoveries from the Lick observatory." Another : "It is certainly most unfortunate, looked at from a standpoint entirely outside of republican partisanship, that, if Mr. Cleveland was to be elected, it could not have happened that

there should have been such a result of the voting as would have thrown the election into congress, in which case, though the ex-president would have been again placed in the presidential chair, the country would have been spared the placing of such a man as Mr. Adlai E. Stevenson in direct line of succession to the presidency of the United States."

No one would for one moment suppose that these overloaded sentences are the result of the superior instruction at Harvard; neither is the defect in the training of students who enter that institution necessarily, or probably, due to poor teaching in the preparatory schools. These defects may be attributable to a variety of causes; and among these causes, is one which is suggested at the close of the following quotation from a college graduate: "Education does not appear to be a panacea for temporal distress in that land of the highly educated, Germany, for one of the German officials declares that there are 'lawyers, physicians and doctors of philosophy among those who are regularly relieved by the poor board,' but it is manifestly unfair to lay this condition of things in Germany to the discredit of education, which can not be expected to make successful lawyers, ministers or doctors out of dolts."

Let it be noted that the imperfect product of the schools and colleges is not always due to faults in the schools. But without bandying the blame from the editor to the college, when he finds that the student fresh from college can not write good English; from the college to the fitting school; from the fitting school to the grammar school; and so on, to the primary school, and the kindergarten, let us admit that the study of English has been defective; and let us seek a remedy.

In the public schools of France, the study of the French language and literature occupies one-fifth of the time. If the English language and literature were to occupy as large a proportion of the time in our school curriculum, the education of our children would be greatly improved. For there is no study in the whole course which may be made a better instrument of culture, than the study of English. It concerns itself with close and accurate thinking; and this kind of thinking is the very end and aim of education.

I. The study of English includes oral speech and written or printed language. The first of these is as important with young

pupils as is the last; and with advanced students the careful study of their oral speech is of great value, though it has generally received but little attention. In society, conversation is frequently carried on in a careless, thoughtless way; words are often used with very little regard to their meaning; expressions are employed because they are novel or striking, rather than because they are appropriate and fitting. And quite generally a word does duty, in oral speech, in a sense very remote from its real meaning. "Awful" "almighty," "splendid," are words commonly used to express a mere superlative. The same bad habit of oral speaking is not unfrequently allowed in the classroom. The pupil recites in slovenly language; he translates a foreign language into English which is inappropriate, unidiomatic, and incorrect; he demonstrates a problem in geometry in language both inelegant and fragmentary; in his recitation in history or geography, the statements are broken and disjointed; in his attempt to narrate a circumstance or to express an opinion, he is careless about the language employed; and in all these cases the teacher is watching so closely for the glimmer of the thought that he fails to notice the language in which the thought is expressed.

The study of English, then, should begin with oral speech; and especially it should so begin the first day of school in the lowest grade. This careful attention to oral language must not be omitted at any stage of school life. Oral speech precedes written language; and if the written language of pupils in school, at first and all along, were made the basis of the written work—the themes and compositions—these exercises would be robbed of all their terror.

The child begins to talk at a very early age; and he knows the meaning of many words long before he can pronounce them. On coming to school his vocabulary is much larger than we have credited him with, and his power of expression is greater than most teachers suppose. It has been assumed that the vocabulary of a child four or five years old contains three or four hundred words. Few people would place the number as high as five or six hundred. From a series of experiments covering a large field, and made with the purpose of ascertaining certain other facts as well as the extent of the child's vocabulary, it has been shown that the ordinary child at the age of four or five years has the

command of twelve hundred words; and many children at the age of five know the meaning and the use of fifteen hundred words.

Now the first and the chief duty of the teacher is, to induce the child just entering school to talk—to express himself. He knows a great deal more than he gets credit for; there is a presumption of brains, of thought, and of ability to speak. Of course the little child is timid; and amidst the unusual surroundings—the "environment," to use an educational term—he retires within himself. It is the duty of the teacher to secure his confidence, and to induce him to reveal his inner self, his thought, and to delight in this revelation.

I have called this the chief duty because the expression of thought begets thought in the child. The thought may be stimulated by objects, toys, the kindergarten gifts and occupations, objects of nature of every variety, stories, plays,—anything whatever that interests him. The oral language—the child's own—may next be written upon the blackboard for him to read; and the written characters should be to him the representatives, of the sounds he has made in speaking. "I see a cat," written upon the blackboard, means to the child, "I s-ēē ă c-ă-t." When the expression is changed to "I see a hat,"—"a mat," he will at once notice that the *c*, the *h*, and the *m*, each modifies the meaning in accordance with his own thought. Not to explain at length this elementary process of teaching reading: The important fact in this connection is that the child connects his oral speech with the written language. He is led to see that written language is the expression of thought, his own thought; and thus the reading is vitalized, so to speak; made a living thing. From this stage it is only a step for him to perceive that written language may also be the expression of another person's thought. It is important that he so look upon it later, when he sees the written or printed language in a book. Simultaneously with learning to read from the blackboard the visible representation of his oral speech, and to translate that and other writing into oral language, the child may be occupied with writing his speech upon the slate or on paper, without the preliminary step of uttering it with his mouth and seeing it written by the teacher. The child is taught to think, to express himself in words, to recognize the written language as another form of his own thought, and to reproduce his thought in visible form; and incidentally he learns

that all written or printed language is the expression of thought. He thus learns, at the very outset of his school education, to look behind the language, whether oral or written, for the thought that lies within.

The above is not intended merely to be an essay on the first steps in teaching reading. Its significance, in my view, consists in this: That the process here outlined—the thought, its oral and visible expression, and the perception of the thought in printed or written language—that this process is the same in every stage of the study of English. The process begins in the primary school; and it never ends.

Language is the expression of thought; it is this only; it should always suggest to the student the thought which it embodies; and the student should look beyond the mere form, and perceive the immaterial essence.

II. The oral expression whose value I have attempted to emphasize at the very start, in school life, ought, in my judgment, to receive equal attention at every stage of the public schools. The pupil ought to be accustomed to express in clear, concise, and appropriate language, whatever he has seen or thought, or been concerned about. This oral expression should be a daily practice. Every recitation ought to be made a study of English. The form and the fitness of the expression should be looked upon as of equal importance with the matter to be expressed; for there is no definite thought without definite expression. Vague language involves vague thought; and this careful attention to the language, constant and unremitting, is a great part, if not the best, the most important part, of school education. Of two partners in a business firm, the older had been seriously ill for many years; at length the younger failed in health, and finally died. Some one remarked that it was "funny" that the younger man had died first. It was not funny at all; it may have been remarkable or strange. But in criticising language in this way, it is quite possible to fall into a habit of being finical and overnice. Language, also, which may be appropriate in oral speech, may not be as appropriate when written. It requires much observation and practice, and a delicate sense of fitness, to discriminate with certainty and precision between words and expressions that are colloquial and forcible, and those which are coarse or bordering on the vulgar. A taste too fastidious in the use of language, makes the style stiff and stilted.

In the SCHOOL REVIEW, Vol. 1, No. 2, Mr. Brainerd Kellogg of the Polytechnic Institute, Brooklyn, gives us certain words and phrases which the usage of the best writers says we may employ; but which "purists tell us we *may not, must not use.*" "We may use *each other*, of more than two things, and *one another*, of only two; *a word or two*, as well as *one or two words*; *had rather* or *had better* with the present infinitive, etc." The importance of close attention to the speech consists less in the words and expressions whose proper use is learned, than in the habit of attending to the expression. It is the study of both pupil and teacher which produces the good habit of thought; and this habit leads not only to correct expression, but to correct and orderly thinking; and this is vastly more important. From this habit of much talking by the pupil, under the guidance of the teacher, the habit of writing grows naturally. He has expressed his thought in speech; let him take his seat and, in the presence of his teacher and his schoolmates, let him write, simply and straight on, the same which he has spoken, with no particular attention to the writing or the form of expression;—that is, with no more attention than he gave to his language while speaking. In both cases, equally, his attention is upon the thought; and he notices the language only as it expresses his thought. At the end of the period—fifteen or twenty minutes—the paper may be folded and laid upon the teacher's desk. At the next exercise, this paper may be examined carefully by the pupil; and he will then see how nearly he has said what he intended to say, and he may correct the writing in any way he chooses. Subsequently, the teacher may examine and correct the paper, or the pupil may rewrite it.

It is my firm belief that children brought up in this way, would find no more difficulty in writing what they have to say than they would have in speaking it orally; it would in fact be about the same thing. We are assuming, of course, that this habit of expression, both oral and written, has been continuous throughout the schools; and that the time for each exercise, and the matter talked and written about, have been adapted to the age and capacity of the pupil.

III. Thus far in this discussion not much has been said about a most important feature in exercises of this kind:—that is, the source from which the ideas to be expressed, are to be derived.

In the primary school these ideas come from objects, plays, stories, etc.; and in the more advanced grades, many of the ideas come naturally from the other studies of the school—the geography, the history, the natural science, etc., and from the places of interest, the factories, the shops, and the various processes of manufacture which the pupil may be interested in visiting and describing. But the main reliance for the ideas to be thought about and written about, must be books adapted to the age of the pupil:—books of natural history, fairy tales, books of travel, biography and history; and the reading and the study of well selected books all along in the course is another means for the study of English. The careful reading of books, in connection with the speaking and the writing outlined above, serves a two-fold end:—In the first place the reading—always with the attention chiefly upon the thought, as said above—fills the mind with something to think about and to talk and write about; and in the second place, the language, the form of expression, the style of the writing, imperceptibly and unconsciously mould the form of speech of the pupil; and this without his knowing it. He should not attempt, of course, to repeat orally or to write, immediately after he has finished the reading. Some time should elapse between the reading and the writing, in order that the new ideas may, as it were, digest in the mind, and be assimilated with his thought, so as to become his own. The exact language will not be remembered. And yet the new idea suggested by the reading will retain something of the form of expression in which it was clothed, the thought and the expression are so nearly allied; and this form will affect the written language of the pupil. Thus the reading both expands the thought of the pupil and enlarges the power of expressing that thought.

This habit of reading, and of repeating orally and in writing the substance of what he has read, introduces the pupil to the best literature gradually, and in step with his growing appreciation, and his increasing power of expression; and there is no limit to this power of expression so long as the mind may expand, and there is thought to be expressed.

M. François Gouin, in his admirable book, *The Art of Teaching and Studying Languages*, says that language is of two kinds:—objective and subjective; the objective language being that which expresses the thought suggested by some external

object, and the subjective language being that which expresses what originates in the mind itself—its own emotion or reflection, as it were. "The wheel turns around," for example, expresses a fact perceived through the senses, a fact in the external world; "That is right," on the other hand, is the expression of a reflection in the mind itself.

This objective language expresses a kind of thought which, it appears to me, a dumb creature, an irrational animal, as we say, might have. The child says, "The wheel turns round;" the trained animal notices the motion of his master's hand, compares it with former experiences, and forms a judgment; and he acts accordingly. Why does not this mental process in the intelligent animal correspond with the human thought expressed in what Mr. Gouin calls objective language? The thought expressed by the subjective language is of a more exalted kind; it is the rational thought of a higher order of intellect; it is a kind of thought above and beyond that which is produced by material objects or sense perceptions, and manual occupations; it is a kind of thought to which all right education leads up. This higher kind of thought is expressed in our literature. In this literature are expressed the feelings, the emotions, passions, poetry, and the sense of beauty, the hopes and aspirations, the fears and the despairs of human hearts. English is to be studied in its literature; and the study of this literature is the study of the race, and of humanity.

Now, language cannot express to any one very much beyond that which he has lived and experienced. In order to find a response in the mind, the language must appeal to something already in the mind; there must be in the mind of the reader, a correspondence, some resemblance, something with which to compare. Hence a young child could have no conception of *Paradise Lost*, for example.

Now, as the power of expression should grow by use both in oral speech and in written language, as I have endeavored to point out; as the thought should grow correspondingly, and be nourished by observation and reading, and by expression all along through the elementary stages;—so it appears to me the student's own language should form the basis of his study of literature. That is to say, his knowledge of the structure, the force, and the beauty of the language, should be developed from within; should be a growth and not a mere accretion.

To begin again at the bottom. Is spelling to be learned? The words one uses are of most interest. Is the grammatical structure of the sentence to be studied? For this study the pupil's own language should be examined. It is his own. He knows what it means; and he can therefore more easily appreciate the force which he has put into every part of it, and can understand the effect upon the sense which any modification of its form and structure may produce. Is rhetoric to be learned? How can the nature of a figure of speech be better understood by the student than by recognizing the one which he himself has used? The same is true of the orderly and effective arrangement of words, and of every other principle of rhetoric. The student may study grammar indefinitely, but he will never really know grammar till he has used the language; and it is better for him to study the grammar in his language than to attempt to learn the grammar and then to conform his language to it. He may study rhetoric for years without appreciating fully what it is, unless he has put its principles in practice in actual writing;—not merely in inventing examples, and dissecting the examples of other people, which is generally worse than a waste of time. Does any body suppose that any one of our great writers, Macaulay for example, while writing, ever stopped to say to himself, "Now I will introduce a striking metaphor;" "Now I will set forth this incident in a brilliant period?" He could not have made those glowing sentences of his in such a way if he had tried. He was full of his subject; and the writing and the illustrations were perfectly spontaneous. Much less can any young student write well, when he is thinking of writing well instead of thinking of his subject, and what he has to say about it.

In the study of grammar, which is the study of English, I would have every principle pointed out in the language which the pupil has used. Those grand divisions, the subject and the predicate, that which is spoken of and that which is said, may be pointed out very early. The uses of words in the sentence, as nouns, verbs, adjectives, etc., may be made very clear by reference to the child's own writing or speaking. All the rest may be found in some one of the brief manuals, such as the first chapters of *Foundations of Rhetoric*, lately issued by Professor Hill of Harvard, and the *Manual of English Composition*, by Nichols, published by Macmillan & Co.

In the report of the Committee, already referred to, it is noted that skill in athletic sports cannot be acquired from books; it must be attained by practice, if at all, and the value of the scientific instruction in the books consists in directing merely, and correcting, the practice. The same is true in learning the English language; and the inference from the report is that students come to Harvard well fitted in athletics, and poorly prepared in English. This inference, undoubtedly, corresponds to the facts; and my aim is to introduce into the learning of English the principle of practice now used in learning the athletics.

But the study of English does not consist merely in learning how to use the language. The main purpose of the study is, to mine from the literature the treasures embedded there.

IV. For the thorough, or even a partial discussion of this important part of the study of English there is not now time; nor is there very much necessity, because the ground has been carefully covered in the various works in the teaching of literature. The latest to come under my observation, and one of the best is, a little work entitled *Longer English Poems*, edited by J. W. Hales, M.A., and published by Macmillan & Co., London and New York.

To show what may be done in the study of any selection of prose or poetry, in an introductory essay, *Suggestions on the Teaching of English*, the author has taken up Scott's *Rosabelle:* The piece is first learned by heart; its meaning is next considered; minor, subsidiary matters, allusions to manners and customs, etc., are then taken up; hereupon the question of prosody or of rhythm receives consideration; something about the author comes next, and matters of grammar follow; the words of *Rosabelle* are studied with reference to derivation and origin; and finally, the subject-matter of the poem having been considered in its various aspects, an attempt at criticism may be encouraged, and a recapitulation of the whole is advisable. "After some such lesson as that just attempted," the author goes on to say, "proper curtailments and expansions having been made, will not the intelligence of the pupil have been thoroughly exercised?—will not his previously acquired knowledge have been called into use and arranged better?—will he not have added something to that better ordered store?—will he not, while awaking to a pleasant consciousness of what the power of his mind is, and what appar-

ent entanglements it can unravel if properly trained and directed, learn also how much there is that is beyond his reach, and how, of what lies within his reach, the better part may not be won 'without dust and heat:'—learn the great lesson which concerns not only his schoolboy days, but all the days of his life, that there is nothing worthy to be achieved without sincere, undaunted, never-wearying industry?"

For this kind of study I commend the little poem on Columbia's Emblem, the Golden Corn, to be recognized, I trust, as the typical plant of America, as the thistle is of Scotland, and the lily of France.

COLUMBIA'S EMBLEM.

Blazon Columbia's emblem
  The bounteous, golden Corn!
Eons ago, of the great sun's glow
  And the joy of the earth, 'twas born.
From Superior's shore to Chili,
  From the ocean of dawn to the West,
With its banners of green and tasseled sheen,
  It sprang at the sun's behest;
And by dew and shower, from its natal hour,
  With honey and wine 'twas fed,
Till the gods were fain to share with men
  The perfect feast outspread.
For the rarest boon to the land they loved
  Was the Corn so rich and fair,
Nor star nor breeze o'er the farthest seas
  Could find its like elsewhere.

In their holiest temples the Incas
  Offered the heaven-sent maize—
Grains wrought of gold, in a silver fold,
  For the sun's enraptured gaze;
And its harvest came to the wandering tribes
  As the gods' own gift and seal;
And Montezuma's festal bread
  Was made of its sacred meal.
Narrow their cherished fields; but ours
  Are broad as the continent's breast,
And lavish as leaves, the rustling sheaves
  Bring plenty and joy and rest.
For they strew the plains and crowd the wains
  When the reapers meet at morn,
Till blithe cheers ring and west winds sing
  A song for the garnered Corn.

The rose may bloom for England,
  The lily for France unfold;
Ireland may honor the shamrock,
  Scotland her thistle bold;
But the shield of the great Republic,
  The glory of the West,
Shall bear a stalk of the tasseled Corn,
  Of all our wealth the best.
The arbutus and the golden rod
  The heart of the North may cheer,
And the mountain laurel for Maryland
  Its royal clusters rear;
And jasmine and magnolia
  The crest of the South adorn;
But the wide Republic's emblem
  Is the bounteous, golden Corn!

In all that precedes, no allusion has been made to that broad and fertile field for cultivation—the imagination, a world in itself for the child. What an imaginative child lives, has recently been portrayed by Frances Hodgson Burnett in her description of the *One I Knew Best of All*, begun in the February, 1893, Scribner; and J. G. Holland some years ago in a story called *Arthur Bonnicastle*, published in the early *Scribner's Magazine*, shows most admirably how character and power may be developed by proper culture of the imagination. But for all this there is here no time. My simple purpose is to show that the basis of all study of English should be the child's, or the student's, own language by which he has expressed thought:—to show that the growth should be from within.

A. P. Marble.

Boston, Mass.

THE TEACHING OF MATHEMATICS.

In the teaching of natural science, the past quarter of a century has brought about a reform of the most sweeping nature. Methods of instruction have been radically changed, and the whole point of view from which the study of the sciences is approached has shifted. In its work in connection with chemistry, physics, natural history, botany, etc., secondary instruction has abandoned the abstract for the concrete. The student has now to deal, not so much with formula and law as with actual experiment—or as some enthusiasts would put it, with cause and effect. Of the good which has resulted from this change we need not speak. Of the danger which attends this method of instruction, of the points wherein it is inferior to the method it has supplanted, we have here no room for discussion. All that concerns us at the present moment is the fact that this change *has* taken place. Empiricism is the watchword of to-day. "Read nature in the language of experiment," cries the reformer. The cry has been heard and heeded; and the high school or academy, to say nothing of the college and scientific school, which is not well equipped with laboratory and apparatus, is not looked upon as "progressive," is not "up with the times."

In another department of instruction we see to-day the beginnings of a reform no less important, and certainly no less needed than was reform in the teaching of natural science. Ten years ago the teaching of English in our secondary schools was the merest farce. Latin and Greek, and in many cases French and German, received most liberal allowances of time and most painstaking care on the part of the teacher. But of systematic work in English there was none. Of comprehension on the part of the teacher that such work was needed there was almost none. The public apathy, yes, the apathy among educational leaders even, on the subject of instruction in the mother tongue was most disheartening. But the reform so sorely needed has at last begun. The tangible results that have as yet been produced are insignificant. The actual instruction given in English is meagre and often very poor. The public is still apathetic, and the great army of primary teachers is worse than apathetic. But the college and the secondary school have fairly begun the work of placing on a

sounder basis instruction in this most fundamental subject. Some echoes have reached us from across the water of the agitation in Germany which has for its object the elevation of the study of German; of the utterances of the leading French educators on the study of a nation's own language and literature; and of the revolutionary change in Sweden which has made the study of Swedish one of the corner stones of the national educational system of that country. These tidings from abroad, coupled with the earnest endeavors of our own educational leaders, have fairly inaugurated among us this most important reform. The study of our own language and literature is at last coming to receive the attention it deserves; and no one can for an instant doubt that the near future will see a leading place given in our schools to this long neglected subject, this branch of study which lies at the root of all true culture.

Science, language, mathematics. About these three branches may be grouped all that is most important in the purely mental part of the school training of children. In the teaching of science, reform has already come. In language it is at hand. In mathematics—well, what can be said of the present status of instruction in mathematics, and of the need and the possibility of reform in its methods? Few will dissent from the proposition that mathematics is one of the essentials of education. No one whose opinion is worthy of respect will deny that our schools, from the first steps of the primary grade to the close of the mathematical work in college, are in need of reform. But reform in the teaching of mathematics must, from the very nature of the case, be slower of growth and more difficult of achievement than has been the case in the natural sciences. About the subject of mathematics there is nothing to inspire the enthusiasm or to awaken the spontaneous interest that may be made to accompany work in natural science. Hence the reform, whenever or however it may come, will come slowly, reluctantly, and with uncertain step. But come it must, and come it will; nay, rather, come it shall.

Selecting for our consideration those branches of mathematics which properly belong to secondary education, *i. e.*, algebra, geometry, and trigonometry, let us examine briefly the reasons why mathematics must fairly be considered a difficult subject, much more difficult, for example, than natural science. In con-

nection with the latter the teacher can summon to his assistance a multitude of external aids. A difficult point can be illustrated and explained by experiment after experiment, each in itself sufficiently entertaining and valuable to hold the student's attention; each possessing at the same time the charm of being something that can be done by his own hands, and that can appeal directly to his mind through the medium of the five senses. He is brought to see and to comprehend clearly relations which in the abstract could be acquired only through long and difficult processes. His quick wit detects practical applications which may be useful to him in his future life; and he is made to feel in various ways that he is, in the study of science, acquiring something whose value he can comprehend. In a word, he is entertained and interested, and he sees the practical value of what he is doing.

What, on the other hand, is likely to be his mental attitude toward mathematics? He finds himself here brought face to face with, and expected to acquire, something essentially abstract and theoretical. Now and then his common sense does find some fact or principle that is really practical: certain laws respecting the computation of areas and volumes are established in his elementary geometry; the unknown quantities of algebra furnish an easy method of solving many practical problems with which the future may confront him; the sine, cosine, tangent, etc., of trigonometry are indispensable tools in ordinary surveying. But of what use is it, he asks, to know that the sum and the product of two conjugate imaginary numbers are both real numbers? Why is he bothered about the division of a line into its extreme and mean ratio? Who cares whether or not $\sin x + \sin y = 2 \sin \frac{1}{2}(x+y) \cos \frac{1}{2}(x-y)$? He can imagine no possible use for these things, and his mind instinctively rebels against them. In a word, he is not entertained, he is not interested, and he does not see the practical value of the work upon which he is compelled to spend his time. The result of all this it is easy to see. The student who has no natural taste or aptitude for mathematics becomes disgusted, then angry, then disheartened. Hard work, induced by sincere love of his other studies or by fear of the disgrace of failure, may carry him through his prescribed course; but it is a wearisome experience, and it leaves on his mind a deep seated aversion for the work he has been through, and causes him throughout his future life to look back on his mathematics as the "worst grind" of his entire school and college life.

The facts here stated are incontrovertible. They are borne out by the experience or observation of almost every scholar who has ever pursued a college, or even a high school course, and they constitute one of the greatest blots on the American educational system of the past century. And what, meanwhile, has been the condition of mathematical *instruction*? If, as is undeniably true, mathematics is the most difficult branch in our commonly prescribed curricula, it would certainly seem as though its instruction should be entrusted only to those of most scholarly attainments and ripest preparation for their work. But the exact reverse of this always has been and is to-day true in this country. In the early part of this century it was almost invariably the case that instructors in mathematics were chosen from among those who had distinguished themselves in their classical studies. Forty or fifty years ago the opinions began to obtain that, in the teaching of mathematics, scholarship was an entirely secondary matter; that, in fact, any one could teach mathematics. At the present day this same pernicious opinion is still almost universal, and it is only in a comparatively small number of our colleges and scientific schools, and in a still smaller number of our secondary schools that the dangerous absurdity of this proposition has been recognized, and earnest attempts have been made to place the control of this branch in the hands of those properly fitted to take charge of it. Since the beginnings of education in this country, mathematics has been weighted down by the dead load of inefficient instruction so ignorantly fastened upon it. Under that load it is still weighted down. A long, hard struggle must be passed through before the subject is emancipated from its present burden; before the reform so earnestly desired and so acutely needed can be established.

For the study of mathematics four principal reasons may be given: 1. It is in itself a pure science and, like any other pure science, is worthy of study for its own sake. 2. It is invaluable as a means of mental discipline. 3. It is capable of innumerable practical applications. 4. It is necessary for the completion of all or nearly all prescribed school curricula. Of course it need not be said that the number of those who are influenced only by the first two, or either of the first two reasons is, in this country, wholly insignificant. Now and then a student is found who, like Rittenhouse, seems to have been actuated only by the purest love

for mathematics; or like Abraham Lincoln, who forsook his law studies for a time and devoted himself to Euclid for the sake of the mental drill and the training in rigorous accuracy of reasoning to be derived from geometry. But all such cases are to be considered merely as exceptions to the otherwise universal rule that students follow mathematics either because it is a part of their regularly prescribed course, or because it is in some way to be of direct practical benefit to them. In saying this I do not intend to say that all students dislike mathematics. On the contrary, experience shows that a fair proportion of the students of any class selected at random have a natural liking and aptitude for this work. In the preceding, reference is made to those who devote themselves to mathematics for either or both of the first two reasons to the exclusion of the last two. For such students instruction is almost unnecessary. They need now and then a suggestion from an experienced and widely read mathematician or logician—not daily recitations in the ordinary sense of the word. In fact, daily recitations as conducted by the ordinary teacher are precisely what such students do not need; for by that means errors in reasoning and loose habits of thought are inculcated which are sometimes detrimental in the highest degree to the student. From our present discussion, then, we eliminate these two classes, and proceed to consider mathematical instruction only as it affects those who are pursuing this subject with direct practical ends in view, and those who find in mathematics one element of the general education for which they are striving.

Wherein is the mathematical instruction of the present day lacking? Or, to ask the same question in a different manner, what are the particular points that will ensure good instruction in mathematics? Certain important but general truths may be stated in answer to this question, but they are truths that will apply to any other branch equally well. There are, however, a few elements of this question to be considered which are either peculiarly true of mathematics and mathematical teaching, or are of such transcendent importance in the general theory of teaching that they must not be lost sight of in our attempt to answer the question we have propounded.

At every step of our progress in mathematics, review is necessary. The truths of mathematics are, as has already been said, essentially abstract in their nature and are not easily fastened on

the mind. The common processes employed are forgotten by the ordinary student with a rapidity that would be discouraging to the teacher, were it not for his recollection of the ease with which the same things slipped out of his own mind but a few years before. Nothing but repetition, practice, practice, repetition; nothing but a constant, faithful, and long continued hammering can fix the common processes of mathematics in the mind so that their use will become, as it should be, automatic. To a certain extent this matter of review will regulate itself, so constantly does each successive stage of mathematical work involve what has gone before. But to a much greater extent this does not regulate itself; on the contrary, it requires on the part of the instructor unremitting vigilance to ensure a class against losing one week what was learned the week before. In using the word review, it must not be understood that reference is made to turning back and going over for a second time any part of a text-book. What is meant, and this cannot be too strongly urged, is that the handling of any subject should be made to involve to a greater or less degree as many as possible of the subjects already mastered. Text-books are often of but little assistance in this matter, and are sometimes a direct hindrance. Our text-books in algebra, geometry, and trigonometry are often the merest compilations, different bits of subject-matter "whacked" together by some ignoramus, ambitious to see his own name on a title page. Even our best books are far from perfect in this respect; and the teacher who would secure the highest degree of excellence from his students must at the outset make up his mind to be, in some degree at least, independent of his text-book.

No teacher of mathematics ever yet succeeded by trying to make the work too easy for his pupils. One of the most overfed, overgrown, and mischievous educational fads of the present day is the fad which has for its object the attempt to make school work in all its form a pleasant recreation to the learner. Study is not a recreation, and to be productive of good results it never can be a recreation. Study is work, and mathematical study is hard work. Any teacher who tries to persuade either himself or his class that this is not so, is unwise and dishonest. Mathematical work may be and should be made interesting, but it cannot be made play. Mental strength and mental accuracy can not be gained from algebra or geometry if the teacher insist upon mak-

ing of it a mere holiday excursion with himself as conductor. Inaccuracy and the tendency to shirk, which every teacher meets, must be ruled out with the most remorseless rigor. Leniency and infinite patience are necessary in guiding the first steps of a child in its primary work, but the high school and college are not the places for them. If the student is ever to walk alone, he must learn to do it there. But, it is asked, how about those who have for mathematics no natural aptitude whatever? How can such methods be applied, in any fairness, to them? I answer unhesitatingly, Do not compel them to study mathematics at all, beyond the necessary arithmetic of the grammar school and the merest elements of algebra and geometry. Mathematics can play no more part in the education of such minds than pig iron in the art of dressmaking. A part of the somewhat savage ardor that has in the past few years been displayed in attacking Greek, might not unwisely have been turned against the compulsory study of higher mathematics as well. The science of mathematics is the oldest and the noblest of all the sciences. Indeed it is the mother of many sciences. For the part it has played in the scientific and intellectual development of the world it is deserving of the profoundest veneration. But the proposition that higher mathematics, or even the whole of the ordinary mathematics of secondary schools, must constitute an essential part of the education of every man and woman who pursues study above the limits of the grammar grade is utter folly. The idea that no education can be worthy of the name unless it embraces trigonometry, analytical geometry, and calculus is the idea of those who do not know the meaning of the word education. And it is a significant fact that mathematicians rarely if ever hold to that idea. The time is not far distant when mathematics will assume in the curricula of secondary and higher schools its proper place; and when that time comes, mathematics will no longer be a bugbear in the school life of so many boys and girls. Allusion has been made to the difficulty, which so constantly confronts the student, of seeing what possible application can ever be made of many parts of his mathematical work. For this difficulty there is but one remedy; the teacher should be familiar enough with the subject of mathematics as a whole; should be enough of a mathematician to be able to point out at every step the relation between

the work immediately at hand and the work still to come. No matter how admirable a teacher he may otherwise be, he is lacking in one of the potent elements which go to constitute the success of the best mathematical instructors, if he knows nothing of his subject beyond the limits within which his own work of instruction lies. The most difficult parts of a student's work are oftenest those which seem to him to have no relation to anything else in the universe, past, present or future; which seem in short to be mere mathematical puzzles. But interest can be given to any and all such portions of the study, if the instructor only knows enough of his subject to enable him to do it. The same thing almost may be said with respect to the introduction of practical applications into daily class room work. The inability of an ordinary class in geometry, for example, to solve simple problems involving areas or solid contents is appalling. Ninety-nine teachers out of every hundred seem to feel that their duty has been fully done, if the subject matter of the text-book has been faithfully "gone over." Let their classes be tested by an examination consisting entirely of practical applications of that subject-matter. One such experience will take more conceit out of a teacher than a dozen teachers' conventions can put into his head. We hear much at the present day about the absurdity of teaching grammar through a series of years, only to have the student unable to write a simple letter correctly at the close of his course. Is it not equally absurd to ignore the practical side of mathematical work? The fact that text-books are different in this respect is no excuse for any teacher. The old question immediately comes up again, "Is the teacher to be master of his subject, or is he to be the slave of his text-book?"

Last of all, the teacher should shrink from no amount of personal labor in connection with his daily work. The preparation of problems, the correction of written work, and the many other direct and incidental demands upon his time combine into a serious burden; one which teachers would be glad to escape. But the teacher who allows himself to do this is unfaithful to his trust, and has his own ease more at heart than he has the interests of his class. Not only is there no royal road to mathematics, but there is no royal road to success in mathematical instruction.

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SCHOOL STATISTICS AND MORALS.

The relation of school education to morals is a very old question, but it is always coming up again in some new form, and inasmuch as it is always profitable to inquire how we may make the schools more effective in the direction of moral training, it is wise to have the question in some shape on every new program of this association of Superintendents. Morals include a wide range of virtues, on the one hand bordering on the province of religion and ever overlapping it in the case of such traits of character as hope, faith, and charity,—what the church calls celestial virtues to distinguish them from the secular virtues of prudence, fortitude, temperance, and justice.

All kinds of wellwishing and welldoing towards our fellow men come under divine charity or loving kindness. Under faith as a virtue come all those mental convictions which hold us to the theory of the supremacy of good in the universe, and under hope, as the third of the religious virtues, come all such acts or endeavors as we make on the side of Supreme good. Faith is the intellectual virtue, and hope is the virtue of the will, while charity is the virtue of both intellect and will.

The lack of these celestial virtues produces what is called crime, because it sets the intellect and will and the heart against one's fellow men—that is to say, against the social whole.

Very justly then do theologians claim that religious education in this broad sense is the foundation of the institutions of civilization. But it does not necessarily follow that the school should be an appanage of the church, or that anything but secular education should be attempted in it. This will depend upon the further question whether the secular virtues and the secular work of the school are a real auxiliary to the good work of the church. If the habits taught in the school reinforce the spirit of kindness and mutual helpfulness towards one's fellows, if the intellectual studies aid in the spread of Christian doctrines, then the secular school has a moral tendency although it does not take up any direct functions of the church.

I think that the most scientific student of social science will admit that the school is no substitute for the church, and that a nation may possibly exist without a school, but that no nation

can exist without a church. Even the savage tribes with their rudimental civilization have the rudiments of a church, and it occupies a far greater place in savage life than it does in the most advanced civilization. Religion dictates to the Indians of the Pueblos what figures they shall weave into their blankets, and how they shall plant and harvest their corn. But the religion of the highest civilization permits and encourages the conquest of nature by science and art, and separates one after the other the cardinal institutions—family, civil society, and the state—from the direct control of the church, and emancipates them from its authority. Thus Christianity is forever narrowing the circle of superstition and increasing the realm of enlightenment.

Right here, however, comes in the first appeal to statistics, and the first attack and defense of the school on the line of moral influence. It is supposed on the one hand that purely secular instruction in ideas and habits must be anti-religious and consequently tend toward vice and crime. On the other hand it is claimed that purely secular instruction reinforces religion and exerts an influence repressive of vice and crime, although it does not include any theologic teaching. Statistics are collated to show that the majority of criminals in our jails have attended school for a longer or shorter period. Statistics are likewise quoted to show that those States which have the oldest and most efficient school systems have the largest number of criminals in their jails and state prisons. Assertions are made that education merely changes the character of the crime, for example from robbery and theft, the crimes of the illiterate, to forgery and embezzlement or breach of trust, which are the crimes of those who have had school education. The returns of prisons and jails have been often studied with a view to get the facts in these particulars. Most teachers are familiar with the collation of statistics made on the census returns of 1870 by E. D. Mansfield, and published in General Eaton's Report of the Bureau of Education for 1872. The returns from prisons and jails of seventeen States, fourteen of which were Western or Middle States, gave an aggregate of 110,538 prisoners of whom 27,581, or almost exactly twenty-five per cent., were illiterate or not able to write.

The fact that three quarters of all the prisoners could read and write, and had had some schooling, looked serious enough to challenge the good influence claimed for the schools. If school edu-

cation is adverse to crime, why should not the statistics show that a majority of the prisoners are illiterate?

At this point the subject was taken up by those who understood arithmetic, and the question was modified so as to ask whether a given number of illiterates in the population furnished as many criminals as the same number of persons who could read and write. Put in this shape, the answer was intelligible.

The illiteracy of the population in the seventeen States which furnished the twenty-five per cent. of illiterate criminals was about four per cent., according to the census of 1870. These four per cent. of the population furnished twenty-five per cent. of the criminals, and the ninety-six per cent. who could read and write furnished only seventy-five per cent. If one per cent. of the illiterates had furnished only one per cent of the criminals, it would appear that education made no difference in regard to crime. But the illiterates furnished more than six times their quota, while those who could read and write furnished one-fifth less than their quota, and the ratio of the two was one to eight. A thousand illiterates on an average furnished eight times as many prisoners as the same number who could read and write.

This result worked out with much uniformity where the same degree of accuracy in keeping statistics prevailed. The very small quotas of illiterates in Iowa, Kansas, and Minnesota gave more than eight times their share of criminals while the three Southern States included in the seventeen were reported as having twenty-two per cent. of illiterates in the population, and as having sixty per cent. of illiterate criminals, thus showing the illiterates to have five and one-third times their proper share of criminals.

Within the past ten years many of the jails and reformatories have published comparative tables showing the results for a term of years during which accurate records have been kept. These are, of course, more valuable than the returns for any single year, because the inequalities and unusual conditions get eliminated. In 1887, for instance, the jail at Detroit gave a summary for twenty-five years showing an aggregate of 40,338 committals, of whom 28,652 could read and write, and 11,686 who could not write. This gives eight times the quota of criminals to the illiterates, because in the total population of the State there were less than five percentum of illiterates.

To be mentioned as prominent among institutions keeping and publishing accurate and discriminating records in these matters are the Illinois penitentiary at Joliet, the Elmira Reformatory of New York, the Eastern Penitentiary of Pennsylvania, (the 31st annual report) and the New York Juvenile Asylum.

The main point in the interpretation of criminal statistics is to consider the ratio between the number of criminals furnished by a given number of illiterates as compared with a like number who can read and write. We must consider not only the numerators but also the denominators of our fractions in order to get at the true value.

But there are other important items which some future census taker will give us—for example, the number of persons who can read and write but who are so poorly equipped as to be very ignorant. In the statistics taken in the better class of our jails and prisons a good classification of prisoners prevails. In 1870 the illiterate and the very deficient amounted to sixty per cent. of the prisoners according to the returns from New York and Pennsylvania; to fifty per cent. in those from Minnesota, Iowa, Kansas, and California; to seventy-five per cent. in those from Ohio, Indiana, Illinois, Michigan, and Wisconsin; to eighty-five per cent. in those of Maryland, Kentucky, and South Carolina.

Many keep careful statistics in regard to previous condition of industry, the character of parents, the time of leaving home, the state of health. A large proportion of criminals are orphans, or have left home at a tender age. Many have been brought up by criminal parents, very many have never learned how to work at an honest and honorable occupation.

The question of the prevention and cure of crime is a very complicated one, having many coöperating causes besides that of defect of schooling. But that schooling is a very powerful influence is made probable by these statistics, and it is made certain by considering its nature.

Stated in a word, every school demands good behavior, and most teachers succeed in securing it. Good behavior means respect for the rights of others and regularity, punctuality, self-restraint, and industry at mastering the thought, or at least memorizing the words, of learned and scientific men. It is this requirement of good behavior that secures the moral influence of the school. It is questionable whether set moral lessons produce the desired

effect. But obedience to the rules of good order insures moral habits.

This, of course, develops power of self-control. It gives power of inhibiting mere natural impulses and passions, and of choosing higher motives. Even selfish motives become purified as they become more general in their scope and bearing, and a perfectly wise selfishness would adopt the golden rule.

To those who have objected to secular education as tending to fill our jails with educated criminals, the defenders of the schools have pointed significantly to the statistics of religious education among criminals, which are beginning to be kept in a great number of jails and prisons. For instance, in the Detroit jail, in the twenty-five years that were reported, 37,089 out of 40,838 were reported as having religious training, against 2,249 who had had none. As regards religious influences: fifteen had been under Mormon training, sixty-nine under Jewish, and the remaining 37,000 about equally under Protestant and Roman Catholic training.

In the Elmira Reformatory in twelve years those reported as having no religious training were only seven per cent., the Hebrew at five per cent., the Protestant at forty-two per cent., and the Catholic at forty-six per cent.

In the reports from two hundred jails in the United States with about 55,000 prisoners last year* over one-half reported religious training of prisoners—10,376 had no religious training; 9,934 had Protestant; 163 had Jewish; 9,115 had Catholic training.

I quote these facts to show how statistics may mislead a person who does not consider the qualitative side as well as the quantitative side.

It would be preposterous to think that the training of the church or the Sunday school could tend towards the production of criminals. The doctrine of self-sacrifice for others, the example of the Son of God who suffered,—the perfect for the imperfect—no one can conceive a more powerful lesson to distrain the youth from a criminal career. The Jewish instruction in the ten commandments would produce righteousness instead of crime. And yet the neophyte in statistics would say that the ninety-two per cent. of criminals in Detroit who had received religious instruction made a bad showing for religious education. But he would say this only because he is a neophyte, and omitted his de-

*In reply to a circular of inquiry sent out by the Bureau of Education.

nominator like the bad arithmeticians who have been decrying public education in the magazines and reviews, and comparing numerators without a glance at their denominators.

The religious statistics would read, when the denominators are supplied, somewhat as follows: The ninety-two per cent. of criminals who have had some religious instruction have been furnished by the ninety-eight or ninety-nine per cent. of the whole population who have been under religious instruction, while the eight per cent. of criminals without previous religious teaching, represent the one or two per cent. of their class in Michigan. And none of the criminals came there through religious teaching, but because they neglected its counsels.

The attack on school education as increasing the number of convicted criminals—an increase proved by the returns from the different States—has brought forward a new phase of the question.

Educators will remember the brilliant attack, led by Richard Grant White, some years ago, in the *North American Review*, and recently an article in the *Popular Science Monthly* by Mr. Reece. These have been replied to, the former by Dr. Philbrick in the *North American Review* and by Prof. B. F. Tweed in a valuable pamphlet; that of Mr. Reece was well answered by Mr. H. H. Clayton, who quoted the interesting analyses of criminal records in Massachusetts published by Mr. David C. Torrey in *Lend a Hand* for January, 1890.

Massachusetts, it was said, committed to its jails and prisons only 8,761 persons in 1850 while in 1885 it committed 26,651 or nearly three times as many. In 1850 less than nine persons in one thousand, in 1885 nearly fourteen. This evidently demanded a qualitative inquiry: What crimes are on the increase? Mr. Torrey classified them first under two heads, and found that the crimes against person and property were on an average from 1865 to 1870, one to 301 inhabitants, while from 1880 to 1885 they were one to 436—thus showing a decrease in serious crimes of forty-four per cent. The second heading was commitments for crimes against order and decency, and these had increased largely.

Investigating further into these crimes against order and decency, Mr. Torrey found that they were mostly cases of drunkenness. The commitments for drunkenness in 1850 were only 3,341, while in 1885 they had risen to 18,701. The commitments for all other crimes than drunkenness in 1850 amounted to one

for 183 inhabitants, and in 1885 to only one for 244 inhabitants. The average from 1850 to 1865 was one to 174 inhabitants, while the average from 1870 to 1885 was one to 241 inhabitants for other crimes than drunkenness.

This showing completely turned the tables on that class of sensational or emotional writers who deal with what I call hysterical statistics. Person and property have become more safe in Massachusetts. Between 1860 and 1885 commitments for crimes against them decreased forty-four per cent., allowing for increase of population;—the decrease was greatest in crimes against property, but there was a decided decrease of crimes against person. But while person and property have become safer in twenty-five years, drunkenness is not nearly so safe; the prisons and jails are crowded with intemperate people who were formerly allowed to go unmolested through the streets and country roads.

The fact that person and property have become more secure on the whole is very significant when we consider the fact that the numerous cities of Massachusetts afford hiding places for burglars who raid on the small villages of the rural part of the State by night and escape to the city by railroad before morning. Any species of crime that goes unpunished tends to increase, and to multiply criminals. Hence the rural districts in the vicinity of the large cities of the Middle and Eastern States suffer more from this species of marauding than any other portion of the United States, not even excepting the border land.

Of the secular virtues, justice is particularly concerned in this matter of crime. It has two phases, honesty and truth speaking, that are particularly cultivated in good schools. Temperance is a virtue which the school helps to some extent. Fortitude is developed by self-restraint in the school. Prudence or Providence is the special virtue of thrift, and the school nurtures this by increasing intelligence and skill in productive industry.

On the question of the promotion of these virtues by the school, I desire to cite the statistics of thrift in favor of the State that gives the largest amount of schooling to each inhabitant.

To the person who has not become familiar with the facts it is surprising to learn that the total number of years' schooling that each person on an average is getting in the United States is only four and three-tenths, nearly four years of this being furnished by public, and less than six-tenths of a year by the private

schools. But the amount that Massachusetts is giving is six years and eighty-six hundredths, or two and a half years more than the general average. There are only five States that give over six years on an average to their whole population—these are: first, Massachusetts, next, New York, third, Connecticut, fourth, Ohio, fifth, Rhode Island. As the course of study in the elementary school is only eight years, from the age of six to that of fourteen, it is seen that the total average schooling for a citizen of this nation is only sufficient to take him through a primary school with a four years' course. I quote these statistics to point out a connection between education and industry.

The total production of the labor of the people of the United States for 1880 was about forty cents apiece for each man, woman, and child per day; but the production of Massachusetts with its average of seven years of schooling for each inhabitant was nearly double that of the average for each inhabitant of the whole Nation. I have made on different bases three estimates, using data given by Col. C. D. Wright in his census of the State for 1885. The lowest estimate gives sixty-eight per cent. more than the national average, the second, eighty-four per cent., the third, exactly one hundred per cent. The population of Massachusetts is four per cent., its productions eight per cent., of the whole nation. Who that looks at modern productive industry, and considers how much of it is due to machinery, and considers further the dependence of machinery for its management on alert and educated intelligence can fail to see the relation of the schools of Massachusetts to its phenomenal production of the items of wealth?

The virtue of prudence or productive industry insures the existence of other virtues such as temperance and honesty. For the fact that the people of a State have arrived at the stage of political conscience at which they attack not only the crime but also its source in such vices as intemperance, implies an advance also in regard to many virtues. And cannot the well kept schools claim a large share in producing these favorable moral conditions?

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THE REGENTS' WORK IN ENGLISH.

The following made up from the sworn reports from the three hundred and fifty-seven schools taking examinations, and verified by the University records, shows wonderful growth for the first full year under the new system. Statistics relative to law and medical students, and to professional examinations are not included.

WRITTEN TESTS.

	'88-89.	'91-92.	Increase.
Number of schools taking examinations	304	357	17 per ct.
Answer papers written.	193,197	278,907	44 "
Answer papers claimed by schools . .	107,149	176,516	65 "
Answer papers allowed by U. S. N. Y. .	99,079	155,869	57 "

'88-89—Percentage of papers claimed allowed on review by U. S. N. Y., 92 per cent.

'91-92—Percentage of papers claimed allowed on review by U. S. N. Y., 88 per cent.

'88-89—No. of papers rejected on review by U. S. N. Y., 8,070.

'91-92—No. of papers rejected on review by U. S. N. Y., 20,647, increase 156 per cent.

'88-89—Percentage of answer papers claimed to total number written, 55 per cent.

'91-92—Percentage of answer papers claimed to total number written, 63 per cent.

In 1888-89, ninety-two per cent. of the answer papers claimed by the schools were allowed by the University on review. In 1891-92, while the number of answer papers claimed by the schools increased sixty-five per cent., the percentage of those allowed by the University was reduced to eighty-eight. In 1888-89, 8,070 answer papers were rejected by the Examinations department, while in 1891-92 the number of answer papers rejected on review was 20,647. This increase of one hundred and fifty-six per cent. in the number of answer papers rejected on review establishes the assertion of the University officers that answer papers are much more carefully scrutinized than formerly. Notwithstanding this phenomenal increase, no answer paper was rejected in 1891-92 which had not been re-examined by one of the senior examiners. This rule guards against undue severity on the part of junior examiners, but still leaves principals the right of appeal from the decisions of both junior and senior examiners.

1891-92 was the first full year under the plan and courses of study published in the academic syllabus of April, 1890. The figures for 1892-93 will doubtless show still greater growth.

Blanks for suggestions and criticisms relative to the character and scope of the work are furnished with each set of question papers sent to the schools. The reports are tabulated, and each criticism and suggestion is carefully considered by the question board before the papers for the next examination are printed. This plan, started in November, 1892, has already produced excellent results. Principals seem to vie with each other either in recognizing the merits of, or detecting the weak points in questions. At the close of the next and subsequent examinations it is purposed to send question papers with blanks for criticisms and suggestions to the members of the faculties of New York colleges. With the coöperation of our college faculties, principals, and teachers, the University can approximate the standard aimed at in the examinations. The only criticisms which we do not court come from people who will not take the trouble to understand or to aid in improving the character of work which they ignorantly condemn.

The bane of criticism in education, as in theology, is its destructiveness. It pulls down without offering anything in place of that which it seeks to destroy. At present the critics in other States are attacking written examinations. In the language of every civilized nation under heaven, the same arguments have been advanced. When the epidemic has run its course, these critics will follow New York and the countries of the old world in recognizing the fact that there can be no satisfactory substitute for written examinations, and that our duty lies, not in discarding them for visionary schemes, but in endeavoring to make them what they should be.

UNIVERSITY CREDENTIALS.

	'88–89.	'89–90.	'90–91.	'91–92.
Preliminary certificates	8995	7352	8383	9509
Academic certificates, (about 24 counts)	2435	2707	. .	. .
Academic diplomas, (about 40 counts till '90–91, then 50)	1462	1503	1692	1260
Classical diplomas	113	130	140	127
English diplomas			. .	11
Junior certificates			385	3071
30-count certificates			2750	3709
40-count "			1596	2500
50-count "			183	206
Middle English certificates			3	18
Middle classical "			10	69
Senior " "			7	16
Senior English "			. .	2
Advanced "			23	40
Advanced diplomas			1692	539

'88–89—Academic diplomas	1462	
'91–92—Academic diplomas and 40 and 50-count certificates	3984	Increase 2522, or 172 per ct.
'88–89—Academic and classical diplomas	1575	
'91–92—40-count and higher credentials	4701	Increase 3126, or 199 per ct.
'88–89—Preliminary certificates	8995	
Academic "	2435	
	11430	
'91–92—Preliminary certificates	9509	Increase 4946, or 43 per cent.
Junior "	3071	
30-count "	3796	
	16376	

The old academic diploma *required* about forty counts under the new arrangement. Therefore, though the number of academic diplomas has fallen off two hundred and two, yet the total number of the credentials which have taken its place, including academic diplomas, forty and fifty count certificates, shows an increase of two thousand five hundred and twenty-two, or one hundred and seventy-two per cent. in 1891–92 over 1888–89.

In 1888–89, only one thousand four hundred and sixty-two academic diplomas were issued, and one hundred and thirteen classical diplomas. In 1891–92, four thousand seven hundred and eighty-eight academic credentials were issued, the *requirements* for the lowest of which were equivalent in counts to the old academic diploma. The increase in the issue of these higher credentials in the four years, therefore, is one hundred and ninety-nine per cent.

The increase in the number of lower credentials issued has not kept pace with that of the higher, though the statistics in this respect show a growth of forty-three per cent. between 1888–89 and 1891–92. These figures are most satisfactory in establishing the fact that the new system has stimulated a much larger proportion of students than formerly to remain in the secondary schools for the purpose of finishing one of the courses of study prescribed for higher credentials.

STUDY OF ENGLISH.

Answer papers accepted by University State of New York.

	'88–89.	'89–90.	'90–91.	'91–92.
Elementary English	10236	11902	11670	13820
Advanced "			2395	3066
Composition	3937	4118	6577	6365
Rhetoric			2376	1692
English literature	954	1266	1358	1318
American "	. .	. .	1229	889
English reading	. .	. .	285	1005
	14927	16286	25890	28155

'91–92.

Schools taking elementary English						356
"	"	English composition				311
"	"	advanced English				247
"	"	rhetoric				265
"	"	only elem. Eng				19
"	"	"	"	"	and comp	30
"	"	"	"	"	" adv. Eng	9
"	"	"	"	"	" rhetoric	11
"	"	"	"	"	comp., and adv. Eng.	33
"	"	"	"	"	" " rhetoric	40
"	"	"	"	"	" adv. Eng., and rhetoric	199

The number of those studying English, including English and American literature and English reading, has greatly increased, the figures representing the papers accepted in these subjects during the past four years being 14,927, 16,286, 25,890, 28,155. These totals show a growth of eighty-nine per cent. in the past four years.

Elementary English, English composition, and the courses in literature meet with general favor. Elementary English and English composition have indeed largely taken the place of the old English grammar, and rhetoric. Students have spent less time on the study of technical grammar and rhetoric as a science, and have read and written more. It should be added that this was the result aimed at by the University in planning the English courses in the present edition of the academic syllabus.

Professor J. M. Hart in the January number of THE SCHOOL REVIEW makes an exhibit of the work done in English by students admitted to Cornell on Regents' diplomas. There is no evidence to show that any of the students referred to were certified as having done work in English in advance of that required for admission to the high school.

Neglect of the mother tongue is a defect which has been generally recognized in secondary and higher education in Germany, and the best educators have endeavored, in the new French programs of instruction, to encourage the correction of the same evil in France.

The Regents and secondary school principals welcome all help from New York colleges and universities in their endeavors to elevate the character of the English work done in Regents' schools. The fact should not be overlooked, however, that the Regents commenced this crusade about three years ago, and through the hearty coöperation of the principals are now able to report as a result of the first full year under the new system an increase of

eighty-nine per cent. in the number of students taking English subjects in secondary schools. Critics should not forget that a sufficient time has not elapsed to test fairly the value of credentials gained under this new system

English professors in our colleges and universities find it exceedingly difficult to persuade students to recognize the value of correct oral and written expression; nor do the efforts of these professors meet with much encouragement as a rule either from the professors or members of the faculties. Furthermore, college and university professors in other than English departments usually refuse to make any deductions for bad English. The professors of mathematics, for example, relegate the question of expression to the English departments. If the subject-matter is up to the required standard, no attention whatever is paid to expression.

The English professors now turn to the preparatory schools. They admit that they have not achieved much either with the college students or with their colleagues. The students will not learn English, and the faculties will not compel them to learn English. The last hope is the preparatory school. Will these schools do what the colleges and universities are not willing to do, in order that the evils of incorrect expression may be rooted out? The English professors finally learn, much to their surprise, that the secondary school principals have been working since 1890 to improve the character of instruction in English. Primarily, to be sure, they have had in mind, not the small number of students who enter college, but the large majority who never get beyond the secondary school.

A definite standard has been fixed in the Regents' preliminary certificate for admission to the high school. This is annually encouraging thousands of pupils in elementary schools to complete the studies required for the credential.

Let colleges fix a reasonably high standard in English for admission, and the preparatory schools will meet it. At present, even the classical diploma and the course in English reading, which are accepted as covering all requirements for admission to the classical course in many colleges, represent academic instruction in English of only five hours each week for one year. Either the standard for admission to college must be raised, or instructors in secondary schools, colleges, and universities must require correct expression in all recitations.

College entrance requirements in English are so low that students whom our secondary school principals would not certify, may succeed in passing the examination without conditions. Several instances of the truth of this statement were given by principals during the February conference at Binghamton. The recent report to the Overseers of Harvard College shows that students admitted only on examinations are quite as deficient in English as those admitted carelessly by some New York colleges and universities on certificates which do not necessarily include the work required in English.

The academic diploma does not *require* any English except reading, writing, spelling, and elementary English, which represent the training received before entering the high school. It *may* however include English composition, advanced English, rhetoric, English literature, American literature, and two of the various courses in literature, all academic work proper and representing *in toto* five hours' instruction each week for three and one-half academic years of forty weeks each.

The courses for the English and classical diplomas are fixed. Advanced English and rhetoric are not required for either of these credentials, though elementary English, English composition, English reading, and English literature are required for the former, and elementary English and English composition for the latter.

The English diploma, therefore, represents academic instruction in English of only five hours each week for sixty weeks, and the classical diploma, five hours each week for thirty weeks.

In all cases the work for which a diploma is given is specified on the face of the credential. If the credential includes no work in English beyond that required for admission to the high school, it should manifestly not be accepted as equivalent to the examinations in English for admission to college. The credential may be safely accepted, however, if it specifies on its face that examinations have been passed in a sufficient number of subjects to cover the English requirements for admission to college. Each count represents ten weeks' instruction for five hours each week. If any diploma includes eight English counts in advance of reading, writing, spelling, and elementary English, it means that the holder has received academic instruction in English for two years of forty weeks, five hours each week. This would be more than three hours' instruction each week for three years in the high school.

The simplest way to determine the value of work done in

English and in other studies is to scan the list of subjects written on the face of each credential. This is, in fact, the course the University is forced to pursue in the case of students from all parts of the world who present to us credentials in as many as twenty different languages, and apply for admission to the study of law or of medicine.

The fact that many graduates of our best colleges neither speak nor write good English is not due alone to faults in the fitting schools or in the colleges. It should be attributed as well to lack of proper training in the elementary schools, and to the influence of heredity and environment.

The figures show that at least Regents' schools have done much during the past year to make English popular. They should now aim to make instruction in English more thorough.

Up to the present time, English has been considered only in examinations in English language subjects. February 9, 1893, the Regents passed the two following resolutions:

1. *Teaching of English:*—That the Regents require satisfactory teaching of the English language, especially in composition, for at least three hours each week during the academic course, as a condition of admission to the University or of retention on the list of institutions in good standing and entitled to receive apportionments from the academic fund.

2. *English in all Examinations:*—That the following plan be submitted to the principals of the state for suggestions and criticisms and that the results be reported to the next meeting: That, beginning with the academic year 1893–4, answer papers which would be accepted for the subject-matter may be rejected for untidiness, illegible writing, or bad English. That pass cards or other credentials may be issued for subject-matter only, if stamped "deficient in English" or "not passed in English;" but that no credential without such plain limitation on its face shall be issued to any candidate whose answer papers have been reported by the revisers as below the minimum fixed for neatness, hand-writing and use of English, till such candidate shall either pass the subject again satisfactorily or pass an English examination showing that he has corrected the faults for which his former papers were reported.

That the opinion of the principals be also asked on the plan of rejecting unconditionally papers deficient in English, neatness, or legibility.

3. That the Chancellor appoint, if available funds allow, a special inspector and examiner in English, who shall by personal inspection, correspondence and special study, give his time to improving the teaching of English in the institutions of the University and shall take charge, under the director, of the preparation of question papers in English and of the marking of all papers for English.

The interpretation to be given to these resolutions will depend somewhat on the suggestions and criticisms of principals to whom

the plan will be submitted. Certainly, no sudden changes will be rendered necessary either in quantity or quality of the English work done in good schools. The fact, however, that some institutions have very much neglected the work in language and literature, has made it necessary to adopt, as in the case of books and apparatus, some minimum standard as a condition of admission to the University or of retention on the list of institutions in good standing and entitled to receve apportionments from the academic fund.

The standard proposed in the first resolution falls below that maintained in leading American secondary schools, but is about equal to that required in German in Prussian *Gymnasien*. The requirements will be met for the present, if at least three recitation hours or periods of forty minutes or four recitation periods of thirty minutes be given each week during the academic course to all work in English language and literature, including reading, writing, rhetoricals, etc. The University cannot insist that all students take the full English course. This would militate against the present system of University credentials, adopted for use until the revision of 1894.

The decision that answer papers which would be accepted for the subject-matter may be rejected for untidiness, illegible writing, or bad English, will tend to make the English courses more popular. As a matter of fact, in all subjects both in daily recitations and final examinations, the best teachers in secondary schools have always made deductions for untidiness, illegible writing, or bad English. In this respect they have shown more care, as a rule, than college professors.

Till the new plan of requiring satisfactory work in English in all examinations goes into effect, the value of credentials as to students' attainments in English will depend entirely on the English subjects taken. The examination department has found that, in spite of the general distribution of handbooks explaining the system of University credentials in detail, much ignorance still exists. We are on the one hand met with criticisms which apply only to a system which was abandoned in 1890, and on the other by the statement that students holding our academic diplomas are deficient in subjects which are not included in the work required for the credential.

James Russell Parsons, jr.

Regents' Office, Albany, N. Y.

THE BOSTON MEETING.

The Department of Superintendence of the National Educational Association held its annual session in Boston, February 21–23. In giving a brief report of so important a meeting, the writer attempts only a summary of the salient points in the papers and discussions. The printed proceedings may be obtained with the report of the International Educational Congress at Chicago.

President Brooks presided. A paper on "Wood-work in Grammar Schools" by Superintendent Curtis, New Haven, Conn., was the first presented to the meeting. The speaker emphasized the educational value of manual training altogether apart from utilitarian considerations. He outlined a course in wood-work, enumerating the number and kinds of tools, and the cost of material. The work should be done in the school room under the supervision of the regular teacher. It would occupy thirty minutes three times a week, and ought to be compulsory for both boys and girls. The discussion was opened by Superintendent Meleney of Somerville, who gave a history of the work in Boston, and described the difference between the Prussian and Swedish systems. He pointed out the necessity of having well-trained, competent, instructors, and of basing the work on educational principles. Principal Kilbon of the Manual Training School, Springfield, Mass., gave an account of the work done in his school.

The next paper was on "The Study of English in Public Schools." * The discussion which followed was participated in by J. H. Blodgett of the Census Bureau, Washington, J. T. Prince, Agent of the State Board of Education, Mass., R. A. Metcalf, Supervisor of Schools, Boston, Mass., E. A. Singer, Assistant Superintendent, Philadelphia, Pa., F. W. Parker, Cook County Normal School, Ill., Superintendent Wise, Baltimore, Md., and Superintendent Gove, Denver Col.

"Examinations and Promotions in Elementary Schools" was the next subject for discussion. Promotion, according to the speakers, should depend on the judgment of the teacher. Examinations should test the teaching rather than the knowledge of the pupils. The following gentlemen spoke on the sub-

* This paper is given in full in this number of THE SCHOOL REVIEW.

ject: Superintendent Mowry, Salem, Mass.; J. L. Hughes, Inspector of Schools, Toronto, Canada; R. K. Buehrle, City Superintendent, Lancaster, Pa.; Superintendent Wise; Superintendent Miner, North Adams, Mass.; Superintendent Maxwell, Brooklyn; Superintendent Hall, Arlington; Superintendent Powell, Washington, and Col. Parker.

Superintendent A. S. Draper, Cleveland, Ohio, read a paper on "Plans of Organization for School Purposes in Large Cities." The problem of municipal government is the greatest problem in this country, and the school system is the most important part of that problem. The selection of superintendents and supervisors is at the bottom of the whole scheme of education. The following principles should characterize a city school-system: (1) The elimination of politics from the selection of school boards, or, at least, from the administration of the schools. (2) Small school boards, with members representing the whole city, and not wards or districts. (3) The complete separation of school administration from municipal business. (4) The school system of a great city must not only have an autonomy of its own, but its administration must be separated into suitable departments. A detailed account was given of the reforms which Cleveland is undertaking along these lines.

The subject of "The Supervision of City Schools" was presented to the meeting by Superintendent Maxwell. This consists of supervision by principals and by city superintendents. The latter should work largely through the former. Every principal should be held responsible for the work of his school. He should look after the sanitation of the building, know intimately the work of every room, give model lessons for his teachers, hold teachers' meetings, direct the teachers in their reading, and allow them freedom of individual action in their work. He should carry out the instruction of the school board and the superintendent, and report to the latter every method that is found to work well, and the efficiency or inefficiency of his teachers.

It is the function of the superintendent to certify teachers and to act as an executive in school matters. He should encourage scholarship by granting different grades of certificates. He should inspect and examine classes (not at stated times) in order to determine the kind of work done. Examinations, however, should not be for promotion except at the end of the grammar school course. He should hold teachers' meetings, and at these

discuss the great principles of education as well as the difficulties that have been met with in the schools. On recommendation of Superintendent Maxwell, a committee of ten was appointed to hold a series of conferences, to examine all subjects connected with the development of the Public School System and to report at the next meeting.

The next topic taken up was "The Reconstruction of the Grammar School Course." The discussion was opened with a paper by Superintendent Gilbert, St. Paul, Minn. He strongly condemned the mechanical and artificial elements in the present school course. The chief subject of study has been arithmetic, but it has not produced noble manhood. It has been greatly overrated as a study for young children. Studies must be chosen with noble content, of widest and most lasting importance. Man and nature, history and literature, and the study of the living, breathing, environment of man; these are of highest, noblest, import. Study of nature cultivates love of truth.

"The Cambridge Experiment" was described by Superintendent Cogswell, Cambridge, Mass. This consists of a change in the grammar and primary schools, in the frequency and mode of promotion, and in the kinds and amount of subject-matter taught. Promotions are no longer made on the results of written examinations. Among the changes in the subject-matter the following are to be noted: In arithmetic more mental and less written work will be given. Geometrical forms and relations, including mensuration, leading up to and including simple theorems in plane geometry are added. The application of elementary algebra to arithmetical problems may be added by any grammar school teacher. In reading, books of standard authors are to be used in place of the former readers. The language instruction pays special attention to writing and speaking English. The geography work is to begin with the elements of physical geography, and is taught objectively. Political geography is to be combined with history. Elementary physics is to be taught by the laboratory methods in the ninth grade.

Professor Hart, of Harvard, Superintendent Hardy, La Crosse, Wis., Superintendent Maxwell, Superintendent Powell, and President Eliot, of Harvard, took part in the discussion which followed. The latter called attention to the fact that the elective system relieves the routine of the teacher's work, and enables children to study advanced branches at an early age.

Dr. William T. Harris read a paper on "What do School Statistics teach in respect to the Moral Influence of Education?"*

Mr. Hudson Shaw, Fellow of Balliol College, England, gave an address on "University Extension in its Relation to the Public Education." George G. Wilson, Brown University, Wilfred Munro, Director of the University Extension, Providence, R. I., and Superintendent Treudley, Youngstown, Ohio, took part in the discussion.

Papers were given on "The Grading of Country Schools" by Editor Sabin, of the *Iowa School Journal*, and State Superintendent Poland, of New Jersey. A system of grading country schools is much needed, but we must have a system that is adapted to the conditions of these schools, and not adopt the city system.

"The Supervision of Country Schools" was treated by State Superintendent Waller, of Pennsylvania. He emphasized the need of systematic supervision, and described the manner of providing it.

Superintendent Gove of Denver, Col., dealt with the question of "The Sources of Supply of Teachers in City Schools." The average professional life of a female teacher in America is not above three and a half years; hence the need of a constant supply. The city normal school provides most of the training which teachers receive. It is desirable that the teachers employed by a city should be graduates of different normal schools, so that in their educational meetings they may enjoy the benefits that have been derived from different systems of training.

"What shall be done to increase the Efficiency of Teachers in Actual Service?" was the title of a paper given by Superintendent Balliet of Springfield, Mass. All teachers may be divided into two classes, the efficient and the inefficient. Those hopelessly inefficient should be dismissed, the others systematically trained. This can be done in two ways. First, by means of the city normal school, which every city of considerable size ought to have. Inefficient teachers should be obliged to discontinue their work for a year, and attend this institution. Secondly, by means of supervision. The work of the superintendent of the future must be to teach his corps of teachers the science of education, and to train them in the art of teaching. Every superintendent ought to be an earnest student of modern psychology, and he must not be

*This is given in full in this number of THE SCHOOL REVIEW.

satisfied with giving general lectures on psychology and pedagogical principles. He must see that they are applied to the work of teaching.

The topic next discussed was "What shall be done with Non-progressive or Retrogressive Teachers?" This was introduced by Superintendent Greenwood of Kansas City, Mo. The teacher's interest must be stimulated by private conversations with other teachers, and by meetings for the discussion of educational subjects.

Principal Boyden of the Normal School, Bridgewater, Mass., Superintendent Blodgett, Syracuse, N. Y., Colonel Parker, Principal Greenough, Normal School, Westfield, Mass., and Superintendent Chalmers, Grand Rapids, Mich., participated in the discussion of this subject.

Charles DeGarmo, President of Swarthmore College, Pa., gave a paper on "The Value of Literature in Moral Training," and Charles M. Andrews, Professor of Literature, Bryn Mawr College, Pa., one on "The Value of History for Moral Culture." Mr. De Garmo said our moral training is weak in its effect upon the disposition of the pupil. We need to discover a sympathetic interest in adequate ideas of conduct, and to secure a proper disposition toward them. Our main line of advance in moral training must proceed less in the direction of inculcation of mere maxims than in the ethical utilization of all the materials of study and especially of literature. This subject adapts itself perfectly to every grade of intelligence.

Professor Andrews stated that in history we are dealing with life itself in its best sense. It is the study of the growth and development of humanity as an organic whole. The study of history will make men less dogmatic in their opinions; they will judge the past with generosity and the present with caution. It leads the individual to unselfish coöperation in building up a higher standard of morality. It shows the final triumph of good over evil, and thus strengthens the moral life of the present time. Moreover, it shows that moral ends must be gained by means that in themselves are justifiable. It inculcates humility, moderation, and patience. It should, therefore, occupy an important place in any scheme of education and especially in that of a democracy.

W. A. Baldwin.

Andover, Mass.

BOOK DEPARTMENT.

CONDUCTED BY PRINCIPAL C. H. THURBER.

Education from a National Standpoint. By ALFRED FOUILLÉE. Translated and edited, with a preface, by W. J. GREENSTREET, M.A. [International Education Series. Edited by WILLIAM T. HARRIS, A.M., LL.D. Vol. xxiii.] New York: D. Appleton & Company, 1892. pp. xx.—332.

This book may be described as a criticism and a theory of secondary instruction in France. It is a comparative study; for the author fortifies his reasonings by drawing from the experience of other nations. Yet his method is not merely historical; it makes its appeal also to the Philosophy of Education. This indeed was to have been expected, for M. Fouillée is one of the best philosophical writers France has to-day to show. He has also had the advantage of actual experience in teaching, and the present volume makes concrete application—even to the drawing up of detailed courses of study—of the general conclusions and particular maxims to which the author is led by reasoning, criticism, and historical experience.

M. Fouillée argues that the classical humanities must be the basis of every sound system of secondary education. He rates very low the educational value of the modern languages and literatures, though he recognizes the importance of the national language and literature. The present tendency in the direction of a too exclusive scientific and realistic education (as voiced, for example, by Mr. Herbert Spencer) receives trenchant criticism. If M. Fouillée would accept the position laid down by John Stuart Mill in his Inaugural Address at St. Andrews University, that the aim includes both scientific training and literary culture, he would not give equal prominence to each, nor would he agree that these constituted the entire end. He would subordinate science to the classical languages and literatures; and supplementary to both he would make the moral, social, and political sciences an essential constituent of the curriculum of the secondary schools.

Of the five books into which M. Fouillée's work is divided, the first, which deals with Education from the National Point of View, is the least interesting and instructive. It is a sort of philosophical introduction to what follows, indicating, as it were, the author's general attitude toward the problems of education. Little of it is novel, much of it is condensed from M. Fouillée's other writings, or borrowed from the late M. Guyau's. The last chap-

ter, however, should not be omitted; for it is an acute examination of the growing prejudice that national interests demand merely utilitarian studies. M. Fouillée claims that "realistic and utilitarian education is the bane of political communities and especially of democracies like France" (p. 48.)

Book II deals with the function and the limitations of science in secondary instruction. It used to be said that linguistic training merely crammed the mind of the pupils with facts—barren facts. M. Fouillée holds that the scientific system is open to the same charge: it merely imparts information, which, as Bishop Butler has said, is "the least part of knowledge." Its chief result is that it develops the memory. "There is no mental process going on in the boys analogous to that which was going on in Torricelli, Galileo, or Pascal. They are told—It has been proved that air has weight," etc., etc. (p. 63). Besides this defect, the teaching of science predisposes to materialism, utilitarianism, and undue specialization. The remedy is to pay little heed to the quantity of knowledge, but much to "the quality, the method, and the organization of knowledge" (p. 91). But even with this improvement in the teaching, physical science still needs, if it is to be an effective instrument of education, to be humanized, to be animated by the embrace of literary and philosophical culture.

It seems to me that science must remain science; it cannot be transformed into the "humanities." Yet it is true that M. Fouillée has put his finger on the weak point of elementary instruction in science—the mere retailing of facts to be memorized, though other defects and dangers have perhaps been exaggerated.

Book III treats of the Classical Humanities from the National Standpoint. And "if we look at it from the national standpoint, experience shows us that it is no longer enough in these days for a nation which aspires to be superior, to study its own language and its own literature" (p. 107). What language or languages shall be studied then in addition to the mother tongue? The French are bound by historic and organic links to the past; and they have no right to repudiate their heritage, or even their heredity, by breaking with the literary and artistic part of France, which itself is very largely a legacy from Greece and Rome. More particularly Latin, which "is still living in the French language and literature" (p. 132) must be the fundamental subject in secondary instruction. As to Greek, M. Fouillée is not consistent. When speaking in general terms he ranks it with Latin; but when he comes to the details of the curriculum he recognizes that it "is not necessary to all boys receiving a liberal education," that it "is after all, a special subject, and a very difficult subject" (pp. 131–2). The retention of the Latin humanities being advocated on the ground that they are "an essential element of the French humanities of the present day," Greek cannot be defended by the same course of

reasoning; and, indeed, M. Fouillée would "eliminate Greek from the last two years of school life . . . . . just as Hebrew and Sanskrit are in these days too far off to be taken into consideration." (p. 132).

But "if the elements of Greek will be enough" for Frenchmen; what ground, it may be asked, is left for either Greek or Latin in the secondary schools of other than Neo-Latin peoples? Doubtless there are grounds for the retention of one of them at least; but they are not fully brought out in the argument of M. Fouillée, which, nevertheless, so far as Latin is concerned, is absolutely conclusive for French schools.

Book IV contains an account and a searching criticism of "modern" education in France, with comparisons of the corresponding education in England and Germany. Such education which is that of science and modern languages, M. Fouillée regards with the most profound distrust and anxiety. "We do not want," he declares, "to add an intellectual to a military Sedan" (p. 184). By such "Americanism and realism" (p. 178) civilization itself is endangered. To substitute this "harlequinade" for classical culture, or even to treat them—as England and Germany have begun to do—as "equal types" of education, would be a blunder, if not a crime. It may be permissible—and indeed this is recommended by M. Fouillée—to organize different degrees of secondary instruction—classical, special, and professional—but throughout all stages the "soul" of that instruction must remain: "(1) the national language, French; (2) the second national language, historically and as literature, viz. Latin—which is also the international language in the culture of the educated classes; (3) the general theory of mathematical and physical science, which is the same for all; (4) the study of philosophy and ethics, which is original and unrivalled, and the necessary crown of a liberal education." (p. 183).

This leads to Book V which treats of Philosophy, Ethics, and Social Science from the National Standpoint. M. Fouillée considers these subjects essential in secondary instruction, partly because they minister to the life of morality and of sentiment in general, and partly because they alone are able to present the evils with which secondary instruction is threatening us—viz. the stifling of mental activity in the students, premature specialization, and the growth of realism.

I believe, indeed, that the study of philosophy does counteract the evils here described. But I am sure that "at sixteen or seventeen years of age" (p. 224), young people are not qualified to discuss the problems of moral, social, political, and metaphysical philosophy. On the other hand, I agree with all that M. Fouillée says in Chapter VI on the necessity of these disciplines to the teacher himself. It is with the teachers that reforms must begin. Let it be understood that candidates for this profes-

sion must have at once a thorough knowledge of the subjects they are to teach and of the life and growth of the wonderful minds they are to train. This test is not too severe. It is what M. Fouillée means by the pregnant saying: "We must put an end to the invasion of the profession by men who know no Latin and no philosophy" (p. 259).

On the perennial problem of secondary instruction, which is now pressing upon us with unusual intensity, there are few works likely to be as helpful as this volume by M. Fouillée.

J. G. Schurman.

The History of Modern Education. By SAMUEL G. WILLIAMS, Ph.D., Professor of the Science and Art of Teaching in Cornell University. pp. 395. Syracuse: C. W. Bardeen.

Perhaps the student of pedagogy finds no greater lack of material in any department than in that of the history of education. Professor Samuel G. Williams of Cornell University has made a commendable attempt to supply this lack. The book is the outcome of a series of class-room lectures, and as such offers some advantages to the student who lacks time and means to do extended reading. A large quantity of matter is condensed into a small compass.

The first chapter consists of a short review of the pedagogical aspect of the civilized world prior to the educational epoch known as the Renaissance.

Up to the present time, histories of education have been almost exclusively histories of individuals who have evolved educational theories, or have worked out, in the class room, a technic based upon principles previously discovered. Professor Williams's work is no exception to the rule. With the exception of a brief view of the Renaissance as a whole, and an attempt to outline the characteristics of the seventeenth, eighteenth, and nineteenth centuries respectively, the book consists of short sketches of men distinguished for their insight into educational needs, or for their work in the class room.

Among the men of the seventeenth century we find the familiar names of Luther, Erasmus, Montaigne, Ascham, etc., and we find just about the same things stated concerning them, that have been presented before. We are glad to observe in addition, however, a few names that are comparatively new to the ordinary reader of this kind of literature. Notably those are Ludovico Vives, Pierre Ramus, and Richard Mulcaster. The pages devoted to Ramus are of some interest, and ought to lead to a more extended study of the life and work of this man.

The presentation of the theories of Richard Mulcaster seems to be hardly sufficient to introduce him to the reader. Mulcaster as a teacher and writer can hardly be reduced to a half dozen pages,

yet this article may induce the reader to look into the "Positions," than which we can hardly recommend better reading for one really interested in pedagogy. Teachers will probably find no better antidote to the pride and self-sufficiency which in our unguarded moments are liable to assail even the meekest of us, and which may lead us to think that only to us good people of the nineteenth century is it given to see the scope of education.

In passing, a word may be said regarding the article upon Rabelais. It is a question whether the works of Rabelais repay reading by the immature student. One is obliged to wade through a vast deal of matter—not always of savory odor—to get at principles which no doubt exist, but which are concealed under jest, and sarcasm, and buffoonery until they are well nigh indiscernible. Professor Williams has done good service in placing the main points of the educational doctrines of Rabelais within easy reach, thus saving a labor of perusal that is certainly not all profitable, and that may even be regarded as demoralizing.

In the chapter devoted to the seventeenth century reformers, we find the educational principles of Milton treated with more detail than is usual in a book of this character, with more detail perhaps than his one Tractate on Education would justify.

We are glad to note that Professor Williams has made an attempt to present Locke in a fuller and a clearer light than most writers upon education have done. In view of the fact that Locke is the only English speaking philosopher who has given to the world a system of psychology upon which a systematic pedagogy can be based, it would seem that a greater effort should be made to bring his psychological principles within the range of English speaking teachers. Foreigners seem to have profited more by the teachings of Locke than his countrymen have done, yet even they have failed to do him justice when attempting to present his views upon pedagogy.

The chapter upon "Female Education and Fénélon" will repay reading, though one is disposed to smile at the distrust in his own scheme which Fénélon displays. He evidently regards a woman as a very dangerous creature, not to be allowed more than a very limited freedom. His proposition to present sacred history in the form of condensed Bible stories to be given as rewards for good conduct is certainly very naïve, and must be intended to apply to the *very* early life of a woman.

We appreciate Fénélon's well-meant efforts, but we like better the proposition of Comenius, to allow both boys and girls the same educational opportunities up to the age of twelve years, and we like most of all the advocacy of honest Richard Mulcaster, who declares that he is for the education of women "*toothe and naile*" and then proceeds to present rational arguments in support of his views. The time is coming when education will no longer be hampered with the attributes of sex. Then we shall not hear of

male or "female education" and shall find it capable of adaptation to the needs of individuals whether men or women. Not all women require the same education. Some may be satisfied with a "Bible story" (told by a man, of course), but there are others who would grow very restive under the infliction.

In the discussion of teachers of the eighteenth century, Rollin and Kant receive attention calculated to arouse unusual interest. In this connection also Rousseau and Pestalozzi are presented in about the usual light, but neither in the chapter upon the eighteenth, nor in that upon the nineteenth century, do we find any special mention made of Froebel, Fichte, or Herbart. This seems to us a very grave omission, as the students of to-day ought to realize something of the importance of these names in connection with pedagogy.

Among the educators of the nineteenth century, also a few Americans might fill no unimportant place. At this moment we think of "Father Pierce," Horace Mann, David P. Page, E. A. Sheldon, as men well worthy the attention of students.

Of Professor Williams's book as a whole we are disposed to give a favorable judgment, although it is a matter for regret that its scope is so limited as to render it little more than an inventory of the subjects of which it treats. In the presentation of the "characteristics" of the several centuries since the Renaissance, Professor Williams has made a commendable attempt to present a connected view of contemporary education in different countries, but unfortunately he has not presented a philosophical view of the development of education and of systems of pedagogy. As a matter of fact both England and America are woefully poor in any systematized history of education whatever, and this latest work must be heartily welcomed as an effort to aid in the supply of the general need, and as an indication perhaps of a larger work in the near future. A philosophical history of education in a way similar to Cousin's "History of Modern Education" is greatly to be desired.

Margaret K. Smith.

Oswego State Normal School.

Formation of the Union, 1750–1829. By PROFESSOR A. B. HART. Epochs of American History Series. Longmans, Green, and Co., 2d ed. 1893. pp. xx, 278.

The second volume of the "Epochs of American History," is written by Professor Hart who edits the series. The book is a compact little volume, well suited for ready reference. The need of such a series must have been felt by every reader for whose use the larger histories are inaccessible and the shorter ones inadequate. It has been the aim of this series to direct attention to causes rather than to events; to the spirit rather than to the bare facts of

our history. While stress is laid upon certain epochs, the series, nevertheless, presents a continuous history of the American people.

Professor Hart has endeavored to take up the thread of history where the previous volume of the series left it, tracing the development of national life from 1750, when the movement toward union was beginning dimly to be felt, through the Federal period, to the time when the vote of the masses raised Andrew Jackson to the presidency. The volume thus covers one of the critical periods of American history. It would be too much to expect that an exhaustive treatment of this period, crowded as it is with events of the deepest significance, could be given within the limits of this volume. No one, doubtless, realized this more deeply than the author himself. Nevertheless, there are points where the treatment will fail to satisfy the careful reader; and in such places, it should be said, the author is clearly not at his best.

To be more specific, let us take the chapter entitled "Causes of the Revolution." While there is no lack of historical data in the form of events and incidents, all of which testify to the painstaking work of the author among the sources, yet the reader will feel that the causes of the Revolution lay deeper. The writer fails to emphasize the fact that the Revolution was a social as well as a political movement; that the real justification of the Revolution lay not in this or that grievance, but in the fact that the Americans had become so much more democratic that the public policy best adapted to Americans was unsuited to Englishmen. The chapter is not wanting in historical accuracy, but in breadth of view.

On the other hand, the chapters describing the "Federal Constitution" and the "Organization of the Government," though they cover a field already well worked by historians, are admirable. Professor Hart writes with a vigor and assurance that show how completely he has mastered the data and caught the spirit of the time that produced the Federal Constitution. His style is not only clear and incisive, but exceedingly suggestive. A single quotation will justify this commendation: "Americans have become accustomed to look upon the Constitution as a kind of political resolution; the members of the convention themselves felt no sense of strength or inspiration. . . . . The Constitution represents the accumulated experience of the time; its success is due to the wisdom of the members in selecting out of the mass of colonial and state institutions those which were enduring. . . . . The Convention knew how to select institutions that would stand together; it knew also how to reject what would have weakened the structure."

Hardly as much can be said, however, of the remaining chapters. The author seems to lose his grasp of causes and gives undue emphasis to incidents. For this reason we fail to get a clear conception of the part which parties played in our political de-

velopment. For example, the reason why the Federal party lost control of the government and why the Republican party superseded it, is not adequately explained. To understand that revolution of political policy, we must keep in mind the fact that the work of the Federal party was accomplished. It was from the first a reactionary party; and when the reaction had spent itself, previous tendencies—more strictly democratic tendencies—reasserted themselves through the Republican party. This and that incident, no doubt, will help to explain why the change of party supremacy was hastened, but the student must look deeper for the underlying cause of this change.

From this hasty review of Professor Hart's book, it will be seen that his work is unsatisfactory in those chapters in which he has failed to emphasize the inner significance of events. In such places the reader is likely to lose himself in a bewildering multiplicity of events, that he will be unable to interpret. For this reason, it does not seem probable that the book will be widely adopted as a text-book. The advanced student of history will hardly confine himself to any one book, and the beginner will find the "Formation of the Union" rather tedious and deficient in narrative charm.

The book will be most acceptable to general readers of history, who cannot adopt the more thorough methods of the special student, and yet who are not satisfied with the many histories that too often sacrifice accuracy to rhetorical brilliancy. Many chapters will be welcomed by teachers who need to have at hand a careful and complete statement of historical events in a condensed form. In this particular, Professor Hart has rendered a valuable service to teachers of American history.

M. A. Johnson.

Lawrenceville School.

An Introduction to Qualitative Chemical Analysis by the Inductive Method. By DELOS FALL, M.S. Leach, Shewell & Sanborn: New York, 1892.

"This manual is designed to impart but little chemical truth directly. It aims rather to lead the student to gain that truth himself as nearly as possible at first hand and as a product of his own thinking." "If his initial lessons do not introduce him to the true scientific method, it is doubtful whether he will appreciate it fully when set before him further on in his course."

These words of the author give the fundamental idea of the book, an idea which will meet with general approval but is too seldom made the basis of introductory text-books of chemistry. If an interest in research is to be aroused in the student and if he is to be so trained that later he will be able to carry on successfully independent investigation, then, as Professor Fall truly points out, he must be taught from the beginning to work understand-

ingly, and must be trained to apply his knowledge to the discovery of new truths.

An excellent feature of the book is the stress laid upon the importance of consulting the larger text-books and the standard works of reference in connection with the work in the laboratory. By doing this the student will early learn where to look for full information on any branch of the subject, and he will be led to form the very beneficial habit of consulting freely the larger works and sets of journals.

The first five of the twenty chapters of the book are devoted largely to general definitions, nomenclature, and the writing of equations. The student then ascertains by experiment the behavior of the salts of the more common bases with various reagents, and from the actual results thus obtained he formulates a method for the qualitative analysis of any mixture of the bases. The different groups of metals are then taken up in detail, and the characteristic reactions of the bases are given. At the beginning of the chapters, questions upon the occurrence and uses of the various elements are introduced. Chapter nineteen is upon the detection of acids, and here, most unfortunately, the author has departed from his plan and has given an arbitrary scheme of analysis instead of allowing the student to learn by experiment the analytical properties of each acid, and to devise his own method for the identification of any acid in a mixture. The book closes with descriptions of a few flame and blowpipe tests, and a statement of certain precautions to be observed in the use of platinum vessels.

In some places the author has employed terms which good usage would not sanction. Thus the term "acid" salt is used instead of primary salt or secondary salt, sulphocyanide instead of sulphocyanate; and the words "hydrate" and "hydroxide" are employed interchangeably. Again we see the term "ferrosum" used to designate iron in the ferrous condition and the words "full metallic reagent" applied to tertiary sodium phosphate. Apart from such minor faults, however, the book shows careful preparation, and both paper and presswork are excellent. It is well adapted for elementary instruction in qualitative analysis, and in the hands of an able teacher the plan followed in the manual is well calculated to produce enthusiastic and self-reliant students.

L. M. Dennis.

Cornell University.

Principles of Education. By MALCOLM MACVICAR, Ph.D., LL.D. pp. 178. Ginn & Co.

This book consists of a presentation of principles underlying education, together with a brief discussion of training for the profession of teaching. Each principle is formally expressed, and then followed by a discussion calculated to amplify and illustrate the general statement.

The discussion of Habit is of unusual interest and cannot fail to be suggestive to teachers who realize the significance of the work in which they are engaged. Paragraphs 29 and 30 may be recommended especially to the attention of the reader, as they touch upon points which are far too much neglected in the home and in the school.

In paragraphs 38, 39, and 40, the author treats of the acquisition of knowledge in such a clear and forcible manner that every sentence carries conviction with it.

Under "Principles of Pupils' Work" (pp. 98–117), the writer makes very clear the laws upon which the acquisition of knowledge depends, while he gives an idea of the real nature of Method. If he had first discussed Analysis and Synthesis, the subject of Method might have been simplified and thus rendered much more intelligible to the ordinary reader. Without a clear understanding of Analysis and Synthesis it is difficult for many people to realize that Induction is not identical with Analysis, and that in every case the induction itself is purely synthetic. That Dr. MacVicar does understand this (though he does not use the terms) is shown in the statement that Induction and Deduction must go hand in hand (p. 110). Later he shows that Deduction is the third step in what he calls the Inductive Method. It would seem that by Deduction the writer means here generalization, in which case we should heartily agree with him. The generalization is in reality an Induction, however, and is the expression of the universal law discovered through the analysis of particulars. The only processes or methods in education, and indeed, in all thinking, are Analysis and Synthesis, of which both Induction and Deduction are but combinations. While Dr. MacVicar has not emphasized this fact sufficiently, perhaps, he has at least given Method its true place in education, inasmuch as he has shown that it belongs to the pupil and not to the teacher, except to the extent that the teacher is a pupil. We may add to this, that no teacher can succced as an instructor until he recognizes this fact, that Method is the direction in which the mental activity of the learner moves; backward or forward, *i.e.*, analytically or synthetically. The teacher who does recognize this truth very soon learns to adjust his plans and devices to the needs of the pupil, and prepares to follow in the line indicated by the pupil's tendencies.

A thorough study of this part of Dr. MacVicar's book, viz. "Principles of Pupils' Work," ought to give teachers power to make a just estimate of much of the unscientific discussion upon so-called "Methods" to be found in the columns of current educational journals.

Another valuable service performed by Dr. MacVicar is the presentation of the Four Steps of Instruction. 1. Observation. 2. Comparison and Classification. 3. Deduction (Generalization). 4. Verification. This arrangement does not differ essen-

tially from that of the famous Four Steps of Instruction which occupy such an important place in the pedagogical system of Herbart. 1. Merken (Observation.) 2. Association (Comparison.) 3. System (Classification and Generalization.) 4. Philosophical Method (Application.) This discussion is only second in importance to that upon Method, and depends directly upon it.

Of the whole book probably the "Principles of Pupils' Work" is the most important, as it illuminates points that are concealed in the blackness of darkness from the majority of teachers, and at best are but dimly seen by the more advanced students of pedagogy.

While emphasizing this part of the book, we must not overlook the discussion upon "Principles of Teachers' Work," and "Special Principles of Teaching." From a study of these topics the reader may gain useful suggestions regarding the true place of the teacher which he must be careful to keep, lest he prove more of a hindrance than a help to the pupil. Dr. MacVicar says, "Teachers in seeking to condition their pupils properly for their work, must note carefully what they cannot do for them." In his eagerness to do and to secure results, the teacher loses sight of this point, and not infrequently is in danger of doing his pupils permanent injury.

Of the book as a whole we are glad to be able to judge favorably. We commend especially the neat binding, the clear type, the excellent choice of words, the concise and direct style, and the comprehensive arrangement which includes so much, while it occupies so little space. These are all points to be appreciated by the student.

Every page and indeed every sentence bears evidence of profound and orderly thinking, as well as of an accurate knowledge of the questions discussed. We have perhaps no scarcity of literature upon educational subjects, but we have no cause to complain of too many books possessing the characteristics enumerated above, and we heartily recommend "Principles of Education" to both parents and teachers. *Margaret K. Smith.*

Oswego State Normal School.

Selected Orations and Letters of Cicero, with Historical Introduction, an Outline of the Roman Constitution, Notes, Excursuses, Vocabulary, and Index. By HAROLD W. JOHNSTON, Ph.D., Professor of Latin in Illinois College, and late Principal of Whipple Academy. Albert, Scott & Co.: Chicago. 1892. pp. 797.

The plan of this book is novel in several respects. The editor has selected those orations and letters of Cicero which centre about the Catilinarian Conspiracy, with the aim of making a single period of Cicero's life the object of study, and, by confining attention to this, of securing a deeper insight into Cicero's character and the administration of the Roman state in his day. The matter is ar ranged as follows: The First and Second Orations against

Catiline, the Oration *pro Murena*, the Third and Fourth Orations against Catiline, the Oration *pro Sulla*, Twenty-three Select Letters (chiefly from the period of the exile), the Orations *pro Sestio* and *pro Milone*. To the foregoing are added five Excursuses, inserted at appropriate points, viz.: I. The Affair of the Allobroges (from Sallust's *Catiline*). II. An account (in English) of Roman Criminal Procedure. III. Cæsar's Speech in the Senate (from Sallust). IV. A summary of the events from the conclusion of the debate in the Senate to the death of Catiline. V. (before the Letters) An account of the methods and details of Roman correspondence. To the text are prefixed a Life of Cicero, of nearly forty pages in length, and an account of the organization of the Roman commonwealth in Cicero's day,—the latter treating in detail of the Roman People, the Assemblies, the Magistrates, the Ministers of Religion, and the Senate. The notes are at the foot of the page, but a separate edition of the text is provided for class-room use.

It will be seen that while the editor's plan is to restrict the matter contained in the book to a definite epoch and range of events, yet the amount of text is large,—300 solid pages, as printed in the text edition. The editor's general purpose is in itself undoubtedly commendable, and his introductory pages on the life of Cicero and the organization of the Roman government are exceedingly lucid and stimulating. But how, without seriously disturbing the present economy of our secondary schools, can any such amount of Cicero's works be read as is embraced in the selections before us? We predict that few teachers will see their way clear to a performance of the task or even half of it. This opinion is further strengthened by a consideration of the frequent and often serious inaccuracies which greatly impair whatever other value the book possesses. Thus in the notes to the First Oration against Catiline, on 1, 2, 3, *fit publici consilii particeps*, our editor interprets *consilii* to mean "a deliberative body," and refers it to "the Senate,"—which gives us the unnatural meaning: "gets a share of the Senate." Harpers' *Latin Dictionary*, under *consilium*, gives the correct meaning of the passage: "shares in the public deliberations."

On ii, 4, 18, *dissolutum* is translated *radical*,—an impossible meaning of the word. As Halm, in his note on this passage, has well shown, *cupio me esse clementem; cupio me non dissolutum videri.* is really only a rhetorical way of saying: "I wish to be clement, but yet not to seem negligent" (*dissolutum*).

On vi, 13, 11, *aut ad lubidinem facem praetulisti?* the editor soberly informs the student that Catiline used to supply his youthful followers with torches to "guide them to places of dissipation, which would naturally be visited at night." A tallow dip, apparently, was an essential prerequisite to vice in ancient Rome.

Occasionally the editor passes over into the field of English philology. Thus in ix, 22, 6, *minus* is explained as the original

of English *mis-* in *mis-apply, misuse, etc.* A glance at any standard work on English or German etymology (Kluge, for instance), would have saved the author from this error.

As regards the Vocabulary, a hasty examination reveals *modō* (*only*) for *modo; repentē* for *repente* (probably after Lewis's and Harpers' *Dictionaries*, which are wrong here), *nisī* for *nisi*; while the genitives of *fōns, mōns, pōns, frōns* are partly incorrectly and partly ambiguously given as follows: *fōns, fŏntis; mōns, mŏntis; pōns, -tis; frōns, -tis.*

As regards the text, it is to be regretted that the system of vowel marking followed in the Vocabulary is not applied throughout. Every teacher knows how difficult it is to inculcate accurate habits of pronunciation with our present texts. Editors of Caesar and Cicero at least might well follow the example recently set by Rolfe's *Viri Romae*, and mark *all vowels* known to be long. It is unfortunate too that the well-established orthography of Cicero's day has not been consistently employed. To what end is it that our grammars teach that substantives in *-ium* formed the genitive singular in-*ī* (not-*ii*) in the Ciceronian era, if our texts are to ignore this fact, and write regularly *ingenii. officii, consilii, etc.?* So also in case of *volnus, voltus, etc.*, our editor writes sometimes *vol–*, sometimes *vul–*, following the eclectic procedure of the Mss., though it is certain that Cicero used only the form with *o*. A similar inconsistency manifests itself in case of the equally certain *optumus* as against *optimus*. To go further, why should we hesitate to boldly avail ourselves of the full measure of our knowledge, and to write for Cicero's age *quom* (not *cum*), *loquontur, servŏs, metuont, tuŏs, equŏs, etc.?*

The four maps which precede the text share the general inaccuracy of the rest of the book. To be of value to students, they should be scrupulously exact, not only topographically, but orthographically as well. As a matter of fact the Plan of the Forum represents, in crude execution, the knowledge of the last generation. After the superb surveys of Middleton, to say nothing of other accessible material on the subject, there should be no such wretched apology for a map of the Forum, as disfigures the work before us. Nor do such unfamiliar names as *Germalus, Aedes Appollinis, Tabernae Argenturiae, Forol* (presumably for *Forum Olitorium*), *etc.*, enhance its value or attractiveness.

The map of Latium is evidently adapted from a French original, but its nomenclature embraces a variety of idioms. Thus we have the *Equi* (!) and *Hernic* (!) on the one hand, and the *Volsques* on the other; the *Pont Milvius* and the *Mare Tyrrhenium* (sic!); the *Marais Pontins* and *Minturrae* (sic!).

Lapses like these do not become a new work bidding for the favor of American teachers. Certainly he who would advance the cause of education among us cannot afford to regard accuracy as a matter of slight importance. *Chas. E. Bennett.*

Cornell University.

The Story of Columbus. By ELIZABETH EGGLESTON SEELYE. With Ninety-nine Illustrations by Allegra Eggleston. Edited by Edward Eggleston. D. Appleton & Co., 1892. pp. xvi, 303.

The mass of Columbus books is already becoming almost appalling, but the present volume seems to occupy a field largely its own. As explained by Edward Eggleston in his introduction, the purpose of the book is to tell the story of Columbus "in a manner interesting and delightful to the general reader." Dr. Eggleston points out the fact that, in the revulsion from the method of the old school of biographers who inculcated a spirit of hero-worship destructive to true historical knowledge, there has been a tendency to undervalue the great characters of history. "Not content with robbing them of the false laurels with which our imaginative predecessors have crowned them, we give way to a pessimistic passion for denying them any virtue at all. Because they have been praised for qualities they have not, we scorn them for false pretenders." Mrs. Seelye has wisely avoided both these extremes. While making no pretension to original research, she has used the results of the latest critical investigations, but her narrative is not disfigured by the destructive attacks of one or two recent biographers. Healthful and discriminating admiration for the man does not blind her to his defects. Columbus is exhibited as a typical fifteenth century mariner,—often cruel, superstitious and deceptive, but still great in heart and deed. (See pp. 182, 218, 221, etc.)

One cannot but wish that the author had, in place of so large an amount of mere description and incidental details, inserted more information of a solid nature. This, it would seem, could have been done without destroying the popular character of the book. The highly circumstantial account of Marco Polo's travels (Chap. I), is a case in point. Into this might be woven some account of early geographical knowledge as to the rotundity of the earth and the lands of the East. So, too, the very interesting fact (p. 41) that, but for his mistaken notion of the dimensions of the earth, Columbus would hardly have entertained his great project, is not fully intelligible without an explanation of the old belief, based on the apocryphal book of Esdras, that the surface of the earth was six-sevenths land and one-seventh water.

But on the whole the book admirably fulfils the purpose of the author, and ought to do much towards popularizing a correct knowledge of the life and work of Columbus. As a book for the young and for supplementary reading in the schools it is especially to be commended. The tasty binding renders it attractive, and the excellent cuts will add much both to its interest and its value for these purposes.

Ulysses G. Weatherly.

Cornell University.

CURRENT EDUCATIONAL LITERATURE.

CONDUCTED BY PRINCIPAL J. E. RUSSELL.

The Practical Pedagogical Training of Secondary Teachers in Germany. J. Loos. Zeitschrift für die österreichischen Gymnasien. XLIV, 1, pp. 60–84.

At the request of the Austrian government L. visited the most important practical pedagogical seminaries in Germany. In a series of articles he describes and criticises the methods of these schools, and concludes that the best work is being done, not by university seminaries, but by those connected with *Gymnasien.*

I. *University Seminaries:* 1. The Ped. U. S. at Jena, which has a practice school of three elementary classes, meets three times each week in a *theoreticum*, a *practicum*, and a conference. Herbartian principles are followed. The work done in each recitation is recorded in a carefully kept "class book." Candidates attend model lessons given by principals, and are supervised in their own teaching by the director. In the *theoreticum*, methods of teaching are discussed and criticised by professors and students. Important features of the so-called *criticum*, or conference, are debates on the new arrangement of the devotional hour, readings from the "individuality book", discussions and criticisms of the candidates' teaching. 2. The Ped. S. at Leipzig admits twelve university students on presentation of a satisfactory thesis. The director, Prof. Masius of the University, is assisted by Prof. Richter, Director of the Royal Gymnasium. M. is a theorist, R. eminently practical. Each student under M. is required to write a thesis, and to teach, twice each term, a class of five or six gymnasial pupils. These trial lessons are followed by discussions. M.'s work is of little practical value. R., on the other hand, takes his students to his *gymnasium*, where they watch and freely discuss the methods employed. Prof. Hoffmann visits Leipzig schools, and also affords his students an opportunity of acquiring practice. Prof. Strümpell has a *practicum*, but no practice school. Dr. Glöckner, an enthusiastic follower of Ziller, interprets the works of Herbart. The author concludes: "Though Leipzig is very active in ped. matters, it does not concentrate its forces; it lacks system." 3. The Ped. U. S. at Heidelberg is in charge of Dr. Uhlig, Prof. of Ped. at the University, Director of the Gymnasium, and Editor of *Das humanistiche Gymnasium.* Advanced students take part in the conferences, in which practical questions are discussed. The real *practica* are arranged as follows: On the day preceding a trial lesson, U. and the candidate visit the class to be taught, and observe the regular teacher's instruction. Then, the director outlines the work to be done, the methods to be employed, the importance of frequent repetitions, for example, the need of insisting on and giving accurate translations, etc. The trial lesson is given in the presence of director and regular teacher, who take active part whenever occasion demands. After the hour U. criticises the teaching, and gives advice. Upon completion of the university course, the candidate passes a state examination and becomes a *probandus* in a *gymnasium* (Official circular for Baden, March 11, 1891). The author highly approves of U.'s work, but regards its success as due to exceptional conditions that could not easily be created elsewhere. U. happens to be a university professor as well as director of a *gymnasium.*

II. *Seminaries connected with secondary schools.* The Berlin Royal Sem. receives ten men who have already passed the examination *pro facultate docendi.* Conference every two weeks. One *theoretical* and one *didactical* thesis required. Candidates spend six hours of each week in teaching in the *gymnasia* of Berlin. The writer attended a conference. Sophocles's Antigone (891–928) was translated. The director emphasized the importance of model translations. Then section 32 of Schiller's *Prakt. Pädagogik*, On Teaching German, was taken up, and criticised by director and candidates. The S. at Stettin aims to train teachers during the *Probejahr.* Each member teaches ten hours each week. Conferences every two weeks. Since 1890 about thirty-five new gymnasial seminaries have been established. Of these L. mentions: (a) The S. of the *Konigstädter Realgymnasium*, Berlin. During the first six months of the year, candidates attend model lessons. Then they alternate with teachers in giving trial lessons, for which careful preparation is made. In the conferences the teaching is thoroughly discussed. In order to get a good hold on the work done by a single class in one year, the candidate assists in teaching that class. In order to obtain a survey of the entire arrangement of studies in his special branch, as well as of the distribution of the material, and of the differences in instructing the different grades, the candidate spends 3–5 hours of each week, first in visiting, then in teaching, these classes. (b) *König Wilhelms-Gymnasium*, Berlin. Visitation of schools, model lessons, trial lessons, conferences, discussions of teaching, systems, and methods. (c) The Gym. Sem. at Stettin. The writer inspected the foll. documents: the *Arbeitsbuch* regulating the work of the sem.; the day book, recording the work done; the minute book containing subjects discussed and criticisms made; portfolios holding all the papers relating to the different candidates; annual theses; reports, etc. In one of the conferences a member discussed Kern's *Grundriss der Päd.*, On Discipline; another gave a summary of Willmann's *Didaktik*, II, 4. Debates followed. Then the trial lessons were criticised, (1) by the candidate himself, (2) by other members, (3) by the teacher in charge, (4) by the director. (d) The G. S. at Bonn. Candidates prepare a careful outline of the lesson as they purpose giving it before the class. This plan is thoroughly discussed in meeting. Trial lessons begin in June. In his theoretical course the director considers: the aims and problems of the seminary year; pre-conditions of successful teaching; conception and aim of instruction; the material and formal parts of instruction; manifold interest; attention; teaching as an art; selection, arrangement, and distribution of the subject-matter of instruction; nature and value of method; courses, stages, and forms of teaching; means; relation between instruction and discipline; the arrangement of educational instruction; the different educational means; principles of education; education by means of the teacher's personality.

F. T.

Reforms of Public Instruction in Hungary. S. F. Sz. B. Revue Internationale de l'Enseignement. Jan., 1893, pp. 51–73.

The twentieth annual report of the Minister of Public Instruction of Hungary presents a complete view of educational matters in that state. The reviewer has the following to say concerning the secondary schools: Before 1890, in the organization of the secondary schools, the principle of dualism was dominant. The *gymnasia* and the *realschulen* were kept distinct. By the law of 1883, however, students who had finished their studies at the *realschulen* were allowed to take the courses in law or medicine at the university, provided they passed an examination in Latin. Consequently the student from the *realschule* was admitted to these courses with but one classical language, while Greek as well as Latin was required of the student from the *gymnasium.* To remedy this inequality, the law

of 1890 allowed the student in the *gymnasium* to substitute for Greek the following courses: the reading of Greek authors in translation, the history of civilization, and drawing. This reform accomplished, the Minister of Public Instructtou turned his attention to the unification of the secondary schools. There is in Hungary a hereditary prejudice against the *realschulen*. Until some fifty years ago Latin was the official language of the country in science, literature, and politics, and the *realschulen* were unknown. Naturally, therefore, the educated Hungarian still looks upon Latin as essential to general culture. In February of 1892 a convention of eminent educators met at Budapesth to discuss the practicability of combining the *realschule* with the *gymnasium*. The members without exception declared in favor of a single school of secondary education to be organized, with a few important modifications, after the gymnasium. In this unified school Latin will be required of all, drawing and the natural sciences will receive more attention than at present, and in the place of Greek may be substituted either French or some branch of the natural sciences not obligatory in the regular program. This reform also will probably be accomplished at an early date.

E. C. Hills.

The Laws of Brain Action Considered in Relation to School Work. PROFESSOR CALDERWOOD. The Educational News (Edinburgh). Jan. 28, '93. pp. 60–61.

Regard to health must be a first concern in our educational system. Growth and healthy development of the child's brain determine the health of the whole body. Not only school-work but all the occupations of the day, are concerned with brain-work. In muscular effort nerve energy is diffused over the nerve system; in effort of thought it is more concentrated on the brain. The brain claims a fifth of the blood supply of the body and of that amount five times as much goes to the nerve cells as to the nerve fibres. Hence there is special need of guarding against undue nervous strain, particularly of the brain. The brain is in ceaseless action, but no strain is implied so long as there is no constraint. But attention requires effort, and this induces fatigue. Distinct centers in the brain, quite unknown to the agent, are to be brought into regulation, for control of the eye and ear, for use of speech and for effective observation. Brain-work becomes easier, over-pressure, however, may easily become a reality. The brain approaches its full proportions about the seventh or eighth year; earnest study may not begin earlier. To send children early to school is neither an educational nor a health gain. The infant room should be largely a play-room, the lessons largely amusements, and the whole arrangements flexible to the utmost degree. All that we want in such a case is a competent teacher, whose eye is quick to mark signs of weariness. At seven or eight years "task work" should begin. The stimulus and the restraint of the school-room are equally healthful. Weariness arising from muscular effort demands rest, but in nervous fatigue change is rest. It can be found in school-hours. To change from one subject to another, from lessons to singing, from study to manual training, satisfies the law of rest. There is little gain in weary work. While our school programmes are arranged for children of ordinary health, there are two groups of exceptional cases—the poorly fed, and the nervously excitable. The healthy development of the children is an urgent matter for the State; for the one group food and fun should be provided liberally, and for the other there is need of the training and bracing influence of school, along with the limited strain of work, a larger proportion of exercise in the open air, and the calming influence of a judicious guide.

J. E. R.

The Teacher's Test of His Pupils' Work. PRINCIPAL GEO. A. INCH. The Educational Review (St. John, N. B.). Feb., '93. pp. 175–178.

Under this title are included daily tests, or recitations, and review tests, more commonly termed examinations. The object of these tests is twofold: to ascertain whether the assigned work has been prepared, and also to be sure that the instruction has been effective. The work of teaching and testing must go hand in hand, since instruction necessarily proceeds from the known to the unknown. Therefore, skill in testing is an essential in all successful teaching. Has the pupil clear conceptions of the subject? Can he give to those conceptions clear expressions? Has he acquired mental power in the process? These are what the teacher seeks to learn by means of his tests. "Testing is the reverse of teaching in this respect: in teaching we try to impart ideas first then ask for their expression; in testing we must first ask for the expression and through it judge of the ideas." Let the expression be the result of the child's own thinking, rather than an exercise in memorizing. The importance of the part that the memory plays in the child's education is not to be underrated, but no teacher can feel sure that the pupil has thoroughly grasped a new thought unless the pupil expresses it in his own language. Again, be sure that your tests really test. Discover who have prepared the lesson and who have not. "Don't waste school time in telling or even teaching a thing over and over to those whom the tests have floored. Require them to know what has been reasonably taught. Be inexorable here. Vain repetition is a crime, it steals time and destroys opportunity. Let the school conviction of coming to time in all exercises, especially in preparing lessons, grow into a habit and stay a habit." If it is asked how a teacher is to find time for so many tests, the answer is: each successful teacher will invent his own ways. As to review tests, in no other way can a teacher be sure that what has been taught has been retained. Not only is it wise to let the pupils know that a test is surely coming, but when it is to come. It will lead the pupils to question themselves as to whether they know the subject or not. Don't be afraid of cram, —that would imply that your tests were not of the right sort. It is a mistake to hold that testing takes time from teaching. If properly handled these tests teach by cultivating original thinking and expression, and also by the corrections marked on the exercises which should be returned. Both oral and written tests are useful and should be varied. If you wish to test a child's ability to read intelligently, give him a passage with which he is not familiar to examine silently. Then let him express its meaning in writing and finally have him read the passage aloud. It is not to be denied that this work imposes a great demand upon the teacher's time and strength, but the teacher, of any grade in which the pupils write, who does not require and examine a fair number of these written tests, is doing slipshod, indefinite work. But there are examinations and examinations, and if some are useless and vicious, others are useful and righteous. There is a conspicuous distinction between the teacher's examination to ascertain the effectiveness of his own teaching, and an outside examination to settle some outside question, as grading, or standing, or prizes.

Lucy M. Barto.

Methods of Modern Language Instruction in Prussian Realschulen. H. BRETSCHNEIDER. Zeitschrift für lateinlose höhere Schulen. Jan.–Feb., 1893. pp. 109–114.

The writer describes his plan of conducting classes in English, as representing a middle ground between the "modern" and the old time grammatical method. One thing is to be done at a time, either grammar (including pronunciation) or reading. The student cannot have at the same time equal interest in form and context; the sentences from which he studies

form should present no other difficulties. At the same time, as his capabilities increase, so should the demands made upon him. At the first lesson, the importance of the English language is first called to the student's attention, and then instruction begins, the author's text-book being used. The first word in Lesson I., *a*, is written on the board with the German equivalent following, and is pronounced in chorus; the same is done successively with the other words. The meanings are erased after being learned; by the end of the lesson the pupils can understand short sentences constructed from these words, and have learned the rule that accented vowels in open syllables are long. The accompanying home work is to enter the words in a copy-book and to fix them in the memory. Each succeeding lesson begins with a review of that preceding. To avoid monotony the following exercises are employed: a. Written translation; b. Reading by the teacher, books closed; the student to listen and afterwards to reproduce; c. Oral translation from the German into the original, with the aid of (a); d. Oral translation into the original, the teacher giving out sentence for sentence; e. Complete memorization of the sentences; f. Written re-translation, using note-books or loose sheets; g. Written re-translation in copy-book.

This method is carried through two terms and a part of the third in the first year, with the exception that after the first fourteen lessons, the words are learned at home and only pronounced in the class-room. The words and phrases learned are those of every-day household and business life, a point which cannot be too much emphasized. Our pupils need small coin for every-day use.

With lesson 32, reading begins and grammar is let alone for a while. The forms now present few difficulties; only one trouble is found: the irregular verbs. These are mainly acquired through reading, and can be disposed of entirely at the beginning of the second year. The selections must be studied thoroughly; the following exercises may be carried out: 1. Oral translation; 2. Written translation; 3. Oral spelling of difficult words; 4. Conjugation of verbs occurring in the lessons, objects and modifying phrases being attached; 5. Written analysis by question and answer; 6. The same, oral, (a. with open, b. with closed books); 7. Review reading, only the hard places translated; 8. Reading by the teacher, books closed; the student to listen and afterwards to reproduce; 9. Oral re-translation, with the aid of (2); 10. Oral re-translation, the teacher giving out the sentences; 11. English dictation in note-books or on loose sheets; 12. English dictation in the copy-books; 13. Reproduction of the story in connected language; 14. Complete memorization of the text; 15. Written re-translation in note-books; 16. Re-translation in copy-books; 17. English paraphrase. Of course not all these exercises will be used with any one piece.

The second year begins with the irregular verbs; then reading for a while; then the final attack on the grammar. From now on the student's reading is much less disturbed by grammatical difficulties, which have been mastered by repeated references during the reading-lessons and by the translation of the consecutive German-English exercises. A selection from the reading-book is studied, read and translated aloud, and occasionlly translated in writing, the latter being more instructive than mere oral rendering. Illustrations of grammatical rules are noted and explained, and the sentences embodying them are copied. In certain cases the whole piece is altered from the first to the third person, or the reverse; this can be done in various ways: with the book open; with the aid of the German translation in the note-book; freely, from memory, changes and abbreviations being allowed or prescribed. In the third year, besides what has been already mentioned, English correspondence is studied.

For practical reasons, the author recommends that Irving, Macaulay and Scott, be less used as school texts, since their vocabulary is not that of English every-day life. He would prefer Franklin's Autobiography, Dickens's Christmas Carol, or a novel of Marryat or Miss Edgeworth.

Wm. Strunk, jr.

The Teaching of Mathematics. W. H. H. HUDSON. The Educational Times (London). March, 1893. pp. 135–139.

All mathematical teaching should be conducted so as to accord with the fundamental laws of pedagogy; of these the one first in importance is: (1) The understanding of the pupil is to be employed throughout. Progress in mathematics is peculiarly hampered by the substitution of memory and imitation for understanding. The multiplication table is often learned by heart, parrot-like, without being formed gradually by the child. Definitions and propositions in Euclid are learned verbatim in like manner. Formulæ are allowed to be used without being understood. All this is contrary to the first law of teaching; it is calculated to stunt rather than develop the mental powers. Principles, maxims, theorems, formulæ, definitions should never be given to a learner without his intelligent comprehension of them. In no subject better than in geometry can the joy of the discoverer be obtained. It is possible to propose to the mere beginner problems suited to his nascent powers, yet requiring their exercise. Some of the propositions of Euclid will seem unnecessary to a pupil who has had a preliminary training in the actual use of the ruler and compasses. Here is an opportunity for instruction in the nature of proof; fallacies may be propounded and exposed, and so early ideas of logic may be instilled. "Riders" may be used from the very outset; nay, even the propositions may be regarded as riders, the text being consulted only after real effort. It may be pardonable to tell the beginner, as facts to be hereafter proved, some properties for the sake of simple deductions from them. The teacher should not do for the pupil what the pupil can do for himself. Self-reliance should be cultivated, but the pupil should not be left in quite the position of a first discoverer. The teacher is to direct, to warn against dangers, to facilitate progress, but the pupil must make the progress himself. A mistake may be pointed out; the corrections should generally come from the pupil. The teacher should not set, and should restrain the pupil from proposing to himself, exercises beyond his strength or his knowledge. To strain the mental powers is not to develop them. (2) There is a certain way in which the mind acts, and this cannot be departed from without injury. The primary notions of mathematics are obtained through the senses. It is impossible to acquire them otherwise. Begin to teach arithmetic by counting actual objects, not by a rehearsal of names. Use visible illustrations of fractions. Begin to teach geometry by models of cubes, etc. Rule lines with a ruler and draw circles with compasses. But do not use these visible helps after they have served their purpose. The notions should be formed so strongly that the mind's eye sees them when the things are not present in later reasonings. He who can draw a good circle need not; he who cannot, must. The badly drawn circle does not give a wrong impression to the pupil who is full of the true idea of a circle; it does to others. Progress in mathematics consists in the combination of comparatively few fundamental conceptions. Do not substitute words for these conceptions. Do not some of our pupils gabble through Euclid without really knowing the meaning of "bisect," because they have never really bisected anything, though they have learned the verbal definition? Such boys by becoming habituated to the use of words without meanings have weakened their mental powers, while they have lost the natural curiosity of childhood. The next general law of education is (3) continuity. The new and unknown must grow out of the old and known. The old and known must be soundly known and firmly grasped. The pupil should have to unlearn nothing. The teacher should have a grasp of subjects beyond what he is actually teaching, that he may prepare the way. The teacher of arithmetic should be watchful to assist in the transition to algebra, and the teacher of algebra should bear in mind the subsequent study of Differential Calculus. After the three great laws of education noted above, some minor maxims may be deduced.

(*a*) Principles are more important than methods and formulæ. The teacher must see that the pupils understand the language of axioms and conventions, and these must be laid down authoritatively. Do not disguise from them that these are conventions, nor place conventions on the same footing of necessity as axioms. Upon these axioms are based certain doctrines called principles. The principles, few in number, form the bases of methods innumerable. To teach each of these separately without system or coördination is an impossible task. What the learner has to do is to select and combine the appropriate principles; the power to do this is freedom. (*b*) Make slow progress with firm steps. No pupil should be asked to take a step greater than his stride. Mathematics need concentrated attention, but, in early stages, do not demand prolonged effort. Though slow the progress should be continuous. The exercises should form a ladder, and examples should guide to new processes, as well as facilitate processes. (*c*) Vary non-essentials. In geometry invert the figure, etc., taking care not to illustrate particular cases. In algebra use various letters, also show that general propositions are true for complex expressions.

George G. Brower.

Notes on the Mathematical Curricula in Prussian Secondary Schools. DR. HOLZMÜLLER. Zeitschrift für lateinlose höhere Schulen. Jan.–Feb., 1893. pp. 97–109.

In considering a mathematical course, we must remember what mathematics should give the student for his after life: logical training, a knowledge of space, facility in calculation, acquaintance with mathematical symbols, a comprehension of the means of exhibiting tri-dimensional relations on a plane, a clear understanding of first principles, and an insight into elementary mathematical procedure. The point is not to know formulas but to think mathematically, hence for purposes of *culture*, the selection of matter to be studied is indifferent. This allows that preference be given to the practical and useful. The schools are not seminaries for future mathematicians, but contributors to general education. Hence the author has advocated the omission from gymnasium courses of indeterminate equations, continued fractions, maxima and minima, permutations and combinations, probabilities, and analytical geometry. With these gone, other subjects will be better understood, from the greater amount of drill possible.

For mathematical purposes, the nine classes of the school may be considered in three groups of three each. In the under classes practical arithmetic and empirical geometry have their place. The middle group is characterized by the introduction of abstract arithmetic. For the practical purposes of many occupations an elementary knowledge of mensuration is necessary. This involves cube root and logarithms; the latter have numerous other applications, and interest the pupil moreover as showing how mathematical processes may lighten labor. It would be useful to add parallel perspective and an acquaintance with planes and elevations. The rudiments of trigonometry (right and isosceles triangles; sine, cosine, tangent) may be taught in the sixth year. These subjects cannot be taught and demonstrated with scientific vigor, it may be; but what teacher scruples to tell his classes that π is an incommensurable, and what teacher attempts to prove it to them? Yet such knowledge is useful. So too, the use of logarithms is taught earlier than their calculation. It is not even necessary to "prove" that minus times minus equals plus. If there is to be strictness, let it be in the drawing of diagrams.

Concrete instances are to be continually employed; every new term is to be illustrated by a concrete object. The first lesson in solid geometry should be taught from an actual cube. Drawings of solids should be made accurately, with straight-edge and compasses; occasionally the whole hour could be devoted to stereometric drawing. *Wm. Strunk, jr.*

On New Methods and Means of Latin Instruction. SCHLEE OF ALTONA. Pädagogisches Archiv (Stettin). Feb., 1893. pp. 73–82.

The movement for school reform has brought about an agitation concerning instruction in Latin. The courses of study for 1891 demand that the pupil be taught to read understandingly the best classical authors, and be given logical grammatical discipline. This has hitherto been accomplished by thorough drill in translating from German into Latin and from Latin into German. But the examinations have been and still are of such a kind as to make the former exercise of primary importance.

In view of the fact, however, that the number of hours for instruction in Latin has been reduced, the question arises whether knowledge of the chief classical authors as well as facility in writing Latin is attainable. Earnest advocates of the classical languages answer the question in the negative. In case this answer is correct, it is beyond question that the "art of writing Latin" must yield, and more time be given to reading. A recent writer suggests that all translation into Latin and Greek whether as a means to an end or as a class-exercise be entirely forbidden. Grammar is to be studied from examples in classical texts. The author of the article doubts the wisdom of this method, but asserts that such things can be tested only by actual practice.

Methods may be divided into two classes—deductive and inductive. In the deductive method, the pupil is given paradigms, vocabularies and grammatical rules, and with these he forms words and sentences and builds up the language for himself. Until lately it was considered an axiom in Latin instruction that facility in writing Latin exercises and translating into Latin from dictation was the measure of the readiness with which a pupil would understand classic authors. It is more correct to say, that if facility in writing *and* reading Latin is to be attained, the pupil must have frequent practice in *both*.

"*Bellum Helveliorum*," by Dr. H. Baethke (Lübeck, 1892, xv, 90), is a book in which the pure inductive method is attempted. The first twenty-nine chapters of Cæsar are taken as a basis. Most emphasis is laid on analysis; synthesis is confined to word-formation, and practice in declension and conjugation. Translations into Latin are to take place from the beginning, but rather to impress the text and call attention to the forms and combinations, than to enable one to write Latin easily. The vocabularies contain about 7—800 words. The grammar work of the second year is to include syntax, the use of conjunctions, etc. As the abl. abs., acc. with inf., sentences with *ut*, and indirect discourse have already been discussed the first year, the most difficult parts of Latin grammar are thoroughly impressed. The author of the article thinks that the book is to be recommended for private instruction, but cannot be introduced into the public schools because it would not prepare for the examinations.

In conclusion there is a brief discussion of Wilhelm Wartenberg's "Introductory Latin Book". The vocabulary is confined to Cæsar. The book begins with the pres. ind. and the acc. of the first or second declensions, then follow the pres. subjunctive, the other tenses, etc. The development of the verb constitutes "the backbone" of the book; in connection with this the rest of the accidence and the important principles of syntax are gradually introduced. In the main the book is to be praised, and might be used with success in the gymnasia. *A. F. Kuersteiner.*

Instruction in Zoology in the German Gymnasia. E. REBMANN. Pädagogisches Archiv (Stettin). Feb., 1893. pp. 65–73.

Part of this article is devoted to criticism of an attack on the German gymnasia. Criticism is omitted, only the positive views are presented.

Teachers of zoology still labor under great disadvantages. Most text-

books devote too much space to classification. Every teacher knows from experience that mere classifying is of little interest to pupils, especially after the instruction in physics has begun. We hope that the day is not distant when the conviction will become general, that language and mathematics should, throughout the gymnasium course, be properly balanced by the study of natural history, especially of biology. Yet instruction in zoology is of little value, if the teacher does not know how "to set it into the midst of life". The animal must be considered in no other relations than its natural relations. This is the advantage which the new method has over the old.

To analyze plants or classify bugs demands certain logical operations, for which any other study offers equal scope. But to consider any creature, be it plant or animal, with all its modifying influences, to trace all the actions and reactions and individual adaptations, to discover the numerous threads which connect animal with animal, plant with plant, and animal with plant, this is to think in a manner truly "naturwissenschaftlich". An animal or plant should never be studied exclusively by itself, but all of its biological relations should be clearly set forth; in other words, biology itself should be taught, but of course not by classification, but "by paradigms" (*paradigmatisch*). Also, as a matter of course, the subjects chosen should be adapted to the capacities and limitations of the pupils.

The foundation of such study must be a clear conception of form, and for this reason instruction in zoology should be begun with "incessant descriptions" by the children. After morphology has been studied in this manner for the first three years, it may then be attacked in a different way. For instance, a careful study should be made of a single vertebrate, and then the modifications of form in other vertebrates under various influences be taken up.

The order in which the animals are to be studied is of secondary importance. But at all events, instruction "half-way reasonable" will begin with mammals. Within this limit, however, the succession of subjects is rather immaterial.

The demand that we pass from the known to the unknown is not always to be followed. It is more interesting to the pupil to begin with the wolf or the fox and trace the effects of domestication, than to start with domestic animals and work backward. But if we begin with the known, man is certainly to be studied first. *A. F. Kuersteiner.*

BOOKS RECEIVED.

From American Book Company:

Robinson's New Rudiments of Arithmetic. pp. 224. Price 30 cents.

Robinson's New Primary Arithmetic. pp. 80. Price 18 cents.

Robinson's New Practical Arithmetic for Common Schools and Academies. pp. 416. Price 65 cents.

Marmion, A Tale of Flodden Field, by Sir Walter Scott, Bart. pp. 240. Price 20 cts.

From Lee & Shepard:

Physiology for Boys and Girls. A Revised Edition of How to Keep Well: A text-book of health for use in the lower grade of schools with special reference to the effects of alcoholic drinks, tobacco, and other narcotics on the bodily life, by Albert F. Blaisdell, M.D. pp. 246.

Young Folks' Physiology. A revised edition of Our Bodies and How We Live. An elementary text-book of physiology and hygiene with special reference to the effects of stimulants and narcotics on the human system, for use in schools, by Albert F. Blaisdell, M.D. pp. 412

Physiology for Little Folks. A revised edition of Child's Book of Health in Easy Lessons, for schools, by Albert F. Blaisdell, M.D. pp. 136.

From Carl Schoenhof, Libraire-Éditeur:

Cours de Langue Française. Les Premiers Pas, par L. Charles Roux, M.A., Professeur de Français au Vermont cademy, Vt., E. U. pp. 120.

From Ginn & Company:

Hume's Treatise of Morals: and selections from the Treatise of Passions, with an introduction by James H. Hyslop, Ph.D., Instructor in Logic, Ethics, and Psychology, Columbia College. pp. 275.

Greek-English Word List, containing about one thousand most common Greek words, so arranged as to be most easily learned and remembered, by Robert Baird, Professor of Greek in Northwestern University. pp. 43.

Mensuration, by Wm. S. Hall, C.E., M.E., M.S., Adjunct Professor in Lafayette College. pp. 93.

From Leach, Shewell & Sanborn:

An Academic Physiology and Hygiene, by Orestes M. Brands, late Superintendent of Schools, Paterson, N. J., and Henry C. Van Gieson, A.M., M.D., graduate of the College of Physicians and Surgeons, New York. pp. 386. Price $1.

From Macmillan & Company:

Electrical Experiments. A manual of instructive amusement, by G. E. Bonney, with 144 illustrations. pp. 252. Price 75 cents.

How to Manage the Dynamo. A handbook for ship engineers, electric light engineers, and electro-platers, by S. R. Bottone. pp. 63. Price 60 cents.

Plato and Platonism. A series of lectures by Walter Pater, Fellow of Brasenose College. pp. 256. Price $1.75.

English Prose Selections with Critical Introductions by various writers and general introduction to each period, edited by Henry Craik. Vol. I, Fourteenth to Sixteenth Century. pp. 604. Price $1.10.

From University Press, Palo Alto:

Freehand Lettering for Working Drawings, by Charles Benjamin Wing, C.E., Professor of Civil Engineering, Leland Stanford University.

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THE SCHOOL REVIEW

A JOURNAL OF SECONDARY EDUCATION

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The History of Education hangs on the History of the World. No thorough survey of it is possible which does not presume a considerable acquaintance with the history of the leading races which have occupied and subdued the earth and formed themselves into civilized societies.

At what successive periods did these races enter on a progressive civilization; what were the leading intellectual and moral characteristics of each; under what circumstances of climate, soil, and contention with other nascent or dying nations were their native characteristics developed and moulded; and what was the issue of all to the wealth, the life, the thought, the art of humanity?—these are all questions which concern us intimately as students of the history of education. For the history of the education of a people is the history of its civilization; and its civilization finds its record mainly in its intellectual, moral, and aesthetic achievements, and only in a subordinate way in its material successes.

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